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AUG. 52

No Job Is Too Large

The Push-Button Factory

Design for Living

Bigger Crops, Fewer Men

The Nazis Come In

Sunlight as Man's Future Slave

Solar House-Heating

Putting Mechanical Brains to Work

No. 145

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

AUGUST, 1952 No. ~~155~~ 145

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The Quarterly Survey

War Prosperity

Since 1950 the U.S. national product has been zooming upward at the rate of 6 per cent each year, according to figures in President's Truman's Mid-Year Economic Report. This phenomenal economic gain has boosted output from the rate of $300 billion a year after Korea to the current rate of $340 billion a year.

The lion's share of the production increase during the last two years has been due directly to the government's war orders. Of the $40 billion increase, $30 billion has gone to military buying and construction.

If and when the people of North America return to peacetime economy, they will see the beginning of the greatest depression in history.

The Farm Problem

The farm problem is rising again in Canada and the United States. Prices of many agricultural products are in a declining trend and there are indications that crops in 1952 will be abundant and that surpluses will come back to increase pressure on the price level.

Just before the last session ended, the American Congress voted to continue government support of farm prices at 90% of so-called parity for many products. Already, to back up these support prices, the government is making price-supporting loans on a great volume of wheat. It faces the prospect of doing the same on corn,

Sure the Neighbors Understand, Uncle?

Justus in The Minneapolis Star

possibly on cotton and some other crops.

The problem of plenty is also plaguing Canadian farmers, politicians, taxpayers and consumers. From near home, the Okanagan Valley of British Columbia, come reports of the finest sun-ripened tomatoes being dumped to feed pigs or just left to rot on the vines.

The reason is that B.C.'s vegetable marketing board, under its policy of creating artificial scarcity, has ordered that these tomatoes must not be marketed. The growers are denied the right to dispose of them through the board and prohibited from selling them elsewhere.

Meanwhile, in Vancouver and other cities, consumers are not buying all the tomatoes they could use because of the artificially high prices that are being forced on distributors by the government agency.

Technocrats wonder how long the citizens of this Continent will tolerate a cockeyed system which makes them pay to keep prices higher for themselves.

Britain's Crisis

The British government's post-war effort to ward off national bankruptcy by increasing exports, reducing imports, and meeting deficits with U.S. aid has failed and will fail, the **London Observer** says in a lengthy analysis of why Britain is broke.

'Like the soldiers of the First World War, whose valor again and again was squandered by unthinking generals in tactically ill-conceived offensives, the nation is sliding into a sullen and semi-mutinous mood,' the **Observer** re-reports.

'Britain no longer responds to repeated exhortations and alarms and it no longer believes in promises of eventual victory. If a breakdown in national morale is to be averted, the leaders of the nation

'Your Slips Are Showing, Dearie'

Herblock in The Washington Post

must begin to face the true basic facts.'

The **Observer** says Britain is on the verge of bankruptcy because it, of all nations, is most vulnerable to long prevailing world conditions in which population is increasing faster than food supplies and manufacturing industries are growing faster than the supply of raw materials.

As far back as 1932, Technocracy predicted the United Kingdom's present crisis — due to declining resources, excess population and obsolescent equipment. The only solution to Britain's plight is for her to modernize her machinery and export her surplus population to the overseas Dominions.

Machinery on Farms

Total value of machinery and equipment on Canadian farms was more than three times as great in 1951 as in 1941, with increases on the farms of the provinces ranging from a low of 230% to as high as 394%, in terms of current market values, according to a bulletin based on returns of the 1951 Census of Agriculture.

Contributing notably to the large rise in value were sharply increased numbers of trucks and tractors owned by farmers, a striking increase in grain combines on prairie farms and widespread gains in the use of electrical equipment.

Number of tractors in use by farmers climbed 150% in the ten years to 399,683 from 159,752, with 342,655 farms—over half the total number of farms of all sizes—reporting ownership of one or more tractors. Farmers in Quebec, Prince Edward Island and British Columbia reported five times as many as in 1941, New Brunswick farmers four times as many, Ontario and Nova Scotia farmers three times the 1941 number, and farmers in the prairie provinces—where use was generally larger in 1941—about twice as many.

This tremendous increase in the use of machinery and equipment is working a social revolution in this country. **—The Editor**

★ THE STRUCTURE of the American political convention is so idiotic as to be almost obscene. Those synthetic ovations at Chicago that turned on and off like a faucet, the florid hyperbole of the speeches, the inhuman dullness of three-hour ballots while half- and one-third delegates are counted, the circus atmosphere—who can defend them ? *—T.R.B. in New Republic*

No Job Is Too Large

North America need not depend upon the puny concepts of little people, for it has a few capable men who have the intelligence and training to design in practical terms the construction specifications of big projects.

THE people of North America have reached that stage in history and social advancement where they can do anything they want in the realm of physical achievement upon their own Continent. They have the technological means and the trained personnel. They lack only the collective decision to accept positive objectives which are in keeping with their capacity and ability. North America at this moment is the world's Number One power house; its total energy conversion greatly exceeds that of any other continent, and it uses more resources than any other continent. It has demonstrated that it can turn out in a routine manner technological jobs so large that any one of them would have required the concentration of an entire national effort of any prior civilization for many decades.

In the past, a few major jobs were accomplished, but they required many thousands of toiling human beings and many years. They required such a concentration of effort that a political entity could consider only one of them at a time. As examples, we might mention the great pyramids of Egypt and Mexico, the great stone works of the Romans and pre-Incas, the Great Wall and the Grand Canal of China, the irrigation systems of the American Indians, the temples and cathedrals of India, Cambodia, and Europe, and the Suez Canal. Today, all of these projects could be constructed simultaneously by the people of North America, and their regular way of life would suffer very little disruption.

North Americans can do much bigger things than these. With an intensification of Continental effort over a few years, they could make their Area powerful and secure; they could make it into an efficient workshop, a pleasant home and a delightful playground. They could change the course and

direction of rivers, the shape of mountains, the face of deserts, prairies, and hills. They could cover the Continent with a system of inland waterways that would carry freight and tourists from the Pacific to the Atlantic, on the fresh water of the Continent. They could build railroads that would carry new designs of trains at 150 miles per hour—six hours from New York to Chicago, twenty hours from New York to San Francisco. They could build a power grid capable of transmitting a million volt direct current to any industrial region of the Continent.

These are only a beginning. The list of huge projects that have been conceived and outlined is impressive; and, perhaps, they are a little frightening to those who think only in terms of little projects built with innumerable human workers and a conglomeration of hand tools and small machines. North America need not depend upon the puny concepts of little people; for, it has a few capable men who have the intelligence and training to design in practical terms the construction specifications of big projects. Theirs is the genius that this Continent requires for its direction.

With the resources, the energy, and the man-hours that this Continent squandered in World War II, we could have already completed many of these projects and had many others under construction. Out of World War II, we got nothing of direct Continental advantage (unless the stimulus which the War gave to our technological expansion can be considered a net gain). The Price System leaders of the Continent already admit or imply that our participation in the War was a mistake—that we should have been fighting with the fascists instead of against them. In any event, if we had expended the same amount of effort on this Continent in a positive, constructive endeavor that we spent off it in a negative destructive boondoggle, we now would have something of lasting benefit to show for it, and we would have the thrilling inspiration of a great new future to stimulate and guide us.

North Americans intuitively recognize that they have committed a major blunder and they are trying to obscure their guilt-com-

plex with a super-patriotic crusade of hate and destruction. They find themselves in an almost psychotic state of nervous tension and indecision. They are fearful about the future and uneasy about the present. Lacking worthwhile objectives in the physical world, they seek schizophrenic escape into make-believe worlds of self-delusion, fantasy, and hate. Their stated ideals and their behavior do not coincide. The people of a nation cannot continue to be sincere in their professions of peace and good will toward men while they continue to build for war and overtly destroy thousands of civilian people with napalm firebombs and machine-gun bullets. Sanity in a society, as in the individual, requires a close agreement between aspirations and actions. In North America today, there is such a contrast between the two that the people are becoming neurotic. Among other things, they fear that their great country may be in the wrong.

This condition need not remain so; it could be reversed almost overnight under a new leadership with a positive outlook toward the future.

We need not bemoan the lack of such a new leadership; for, it is here, waiting only to receive the signal to proceed. This leadership is the personnel trained in the theory and practice of physical operations — the scientists, technologists, engineers, and technicians. Don't tell us that they do not know how to govern a society. They do know! And they know better than the politicians, the chiselers, and the moralists who have misgoverned the societies of the world for tens of centuries. A social order is a physical mechanism, and the trained personnel knows the factors involved in the governance of physical mechanisms. Politicians, businessmen, and moralists know nothing of physical factors, so they prate about intangibles and imaginary things, such things as values, justice, liberty, morality, and faith in the dignity of man; but in the physical world of things and events their behavior is the antithesis of what they preach. Stymied by 'leaders' such as these, how can one expect America to remain great?

How can any intelligent person expect great leadership to come from frenzied mob demonstrations, such as political conven-

tions, or from polling the opinions of the uninformed populace? It is doubtful if the people of North America — more than one percent of them — recognize any of the names of the thousand people most qualified to direct the destiny of their Continent. The names which are most often before the public, and which are generally considered as belonging to the foremost citizens of North America, pertain mainly to the efflorescent froth of human affairs. If, somehow, all of these so-called notables should suddenly cease to exist, it is probable that the society of this Continent would be in a stronger position than now. For example, what Continental benefits could possibly accrue from the machinations of those people who are actively promoting an Eisenhower Crusade to 'save' Europe from 'materialism, atheism, and collectivism?'

The Price System leadership of this Continent has only one ambition for America—a rabid desire to suppress abundance and institute a permanent scarcity. It would sell out the future of the Continent and the welfare of the people now living in order to maintain scarcity and the chiseling practices that go with scarcity; hence, their avidity for promoting foreign wars, dumping materials abroad, and destroying production at home. The foremost economic and political policies of the United States and Canada deal with wholesale destruction, first, at home, secondarily, abroad. These policies are so much in conflict with the technological trends and the collective interests of the North American people that their contradictions are becoming unresolvable.

The Price System leadership of this Continent—beyond any question of a doubt—is actively trying to promote World War III, and it is actively frustrating world peace. Only a world war is capable of wasting enough production to provide a general scarcity in this post-World War II era. Without a visible or audible exception every Price System leader in North America would rather see this Continent plunged into war than to see it achieve abundance of consumer goods and services for its citizens.

We introduce and discuss these negative aspects of the 'American Way of Life,' regrettably, be-

cause they constitute such a prominent and effective interference with the achievement of this Continent's destiny. Technocracy must continue to point out to the sovereign citizens of North America the nature and extent of this interference; for, until there is an articulate minority who actively resents the double-cross which they are getting from their Price System leadership, there can be no constructive, positive consideration of a new social design. We deplore the circumstance that prevents our giving full and uninterrupted attention to social advancement on this Continent; but, when that advancement cannot be planned and organized on a large scale without the abolition of a well-intrenched interference, the Price System, we are compelled to thump on these negative aspects of Continental social operations.

Once the Price System and its scarcity values no longer constitute an effective interference to the rebuilding of our Continent, no questions dealing with monetary costs, bond promotions, taxation, condemnation of property, etc., would enter into a program of construction projects. The only questions of pertinent significance would be: What is the social objective? What projects are required and from where can they be obtained at the least social cost? How much energy is required and what is the most feasible source? What are the personnel requirements? When the operating factors are reduced to these, the scientists, technologists, engineers and technicians can do a wonderful job of social governance. But there would be no place for politicians, businessmen, financiers, speculators, promoters, or philosophers. (Well, perhaps, a few philosophers could be tolerated as an item of social extravagance, provided they were kept away from where work is being done, safely ensconced in some comfortable 'ivory tower,' designed, constructed, and serviced by technology; but the behavior patterns characteristic of the others would have to be dispensed with entirely.)

Thinking in terms of huge projects already is a common phenomenon on this Continent. Preparations for World War II were conceived and carried out on a gigantic scale; and the preparations for World War III involve

even greater projects. There are few or no questions asked about the technical feasibility of producing such things as 180 Airforce Groups, a s u p e r aircraft carrier, a radar screen around the Continent, or mass production of jet bombers. The only pertinent questions deal with financial cost, taxation, p o l i t i c a l expediencies, allocation of profits, stimulation of business, and other Price System secondaries. There is no question regarding the technical aspects of a St. Lawrence Seaway, but the financial, political, and chiseling aspects cause endless debate and delay. A few people are attracting considerable attention to t h e i r proposals for building an artificial planetoid to encircle the earth. Others are devoted to the problems of launching a rocket to the moon. The North American people are beginning to take for granted that any desirable physical project or development can be executed, no matter how large. The magnitude of c e r t a i n proposals may overwhelm them, but they do not question t h e i r technical feasibility, given the national will to produce them. What concerns them most is the financial cost reflected in taxes on their own incomes; and this, not the technical problems, is what paralyzes their thinking and blurs their vision.

When the technological s k i l l and effort of a nation is directed by politicians, businessmen, and moralists, it is always misdirected into destructive or d u b i o u s enterprises; a n d, unfortunately, these social categories h a v e always had a great deal of say-so about human affairs. When they do occasionally give their consent to great engineering works, they usually load it down with detrimental restrictive p r o v i s i o n s. Hence, we get such political compromises as the Boulder Dam, the Grand Coulee Dam, and the Tennessee Valley development. The United S t a t e s has the world's greatest network of railway tracks, yet it h a s no transcontinental railroad. This Continent has the greatest array of newspapers, the world's greatest radio and television networks, yet these are subverted and used p r i m a r i l y as vehicles for carrying m o r o n i c business advertising and political propaganda. Many of our cities have extensive waterfronts, but, instead of their being made into beautiful recreational parks, they are mostly turned into dirty, un-

kempt dumps. This Continent has the world's largest city, but it is a smelly, noisy, nerve-wracking place in which to live; it is composed of an anarchic hodge-podge of buildings, disconnected transportation lines, and business enterprises—from disheveled dumps to elegant salons. These are a few examples of misdirected achievements under political and business management, when human affairs are left in the hands of those unskilled in the governance of a social mechanism.

North America is now engaged in a gigantic military endeavor, which is being mismanaged in the same way that any other great endeavor is mismanaged when the decisions are made by politicians and businessmen.

There are four major aspects to any modern military operations: Designing and production of materiel and personnel to the places of use; and field operations. These four aspects are never fully developed and tested by the United States and Canada except in time of actual warfare. In peacetime, they 'die on the vine' through disuse and ennui. Under a technological governance, this Continent would always be ready for defensive war, no matter how large. The four essentials for successfully waging a major war would always be ready for immediate action. The productive facilities would already be built and in operation. There would be a large active force of trained persons with others in training, and a much larger force in reserve. The transportation facilities would be ready and efficiently manned. The personnel and machines would be ready for immediate combat use. Yet, there would be no wastage or extravagance of resources, energy, or manpower. There would be no disruption of the Continental economy. There would be no burden of taxation or inflation.

That is the difference between political mismanagement and technological governance. How can this be done? Technocracy has the answer—the only answer.

The reconstruction of this Continent, requiring many gigantic projects, possesses all of the basic elements of modern warfare, except the final destructive phase, as such. It requires the production of many large machines and much equipment. If carefully designed, the equipment employed

on construction projects could be adapted to military use simply and quickly. For example, a large tractor could be so designed that it could readily be converted into a tank by encasing it in an armor-plate shell on which a gun turret is mounted, the whole of which could be lowered in one piece over the tractor and fastened into place. Huge Flying Wing planes could be constructed which would be suitable for transporting freight, men, or bombs, and on which gun turrets and rocket launchers could be quickly mounted; thus equipped, the planes would carry their own defense against fighter attack and would need no fighter escorts. This materiel of war could be kept in regular use, whether this Continent were at peace or at war.

The youth of the Continent, male and female, would be conscripted for three years of service, say, between the ages of 18 and 21, during which time they would be thoroughly trained and experienced in the technology of war. If no foreign military aggression against this Continent is launched, the war would be carried on just the same, only it would be a 'war' against physical nature on this Continent. As we have already mentioned, the factors involved in the reconstruction of this Continent and in a major military operation differ only in their final details. There is not much difference in the actual problems and operations between building a large dam on a river and building a fortified position. The main difference is in their end uses, the one being essential positive, the other essentially negative. By serving three years in the reconstruction of their Continent, the youth would not feel that its time and effort had been wasted in a fruitless boondoggle or that it was a disruptive intrusion into their lives.

The problems of logistics, whether in war or in Continental reconstruction, would be much the same and would require the same type of organization and equipment.

The greatest difference between Continental reconstruction and warfare would be in the actual field operations. But, even here, the differences would not be as great as one might suppose, for a technological war would be conducted in a different manner than a political-business war. The men

and women in the Armed Forces under technological governance would not serve primarily as pawns for the exercise of authority and the development of prestige for an officer class. In fact, there would be no such classifications as 'officers and men.' In the field, there would be no such nonsense as a bayonet charge, foxhole fighting, or hand grenade offensive. These things are almost as passe as the bow and arrow and the slingshot, the type of thing that one would expect from a political and business administration. There would be no attempts to fight for territory, hill by hill, as in a political-business war. The only objective would be the complete annihilation of the attacking enemy force; and this would be done with the most efficient technological means at hand. It would be Total War! There would be no acceptance of surrender, no negotiations, no quarter — only utter and complete destruction of the attacking force. The defence of this Continent, to be effective, must always be prepared for no less than this, regardless of who the enemy or combination of enemies might be. This is a new and different concept of warfare, the type that only a technological governance could organize and execute.

The construction-defence force of this Continent would consist of a professional cadre of a million well-trained men and women plus the population increment of three years which would be in training and active service. Thus, at all times, there would be an active force of seven to ten million people, training for the defence and construction of their Continent, ready at all times to immediately turn to the task of destroying any aggressive force from a foreign continent. Besides these, there would be another ten million or more who have already received training and experience but who are still under 25 years of age, hence would not be immediately required in the regular operational functions of the Continent.

This construction-defence force would not be a parasitic burden on the society; for, through its constructive works, it would more than 'pay its way.' Likewise, the machines — in the main — would serve a useful and beneficial function in the society. Only a few specialized types would be unus-

able for anything other than actual warfare. At this point, we might suggest that an atomic bomb could be tested out more usefully in connection with a large blasting job than in merely making a mushroom cloud in the sky; and the empirical knowledge gained therefrom would be just as valuable, if not more so.

We do not pretend that such a Continental force can or will be organized under the Price System. In fact, any proposal for it would most likely be reviled with all the vitriolic venom that the pens and tongues of the Price System could spew upon it. In the name of all the hypocritical word-idols of the Price System, it would be denounced. It would be declared anti-Christian and contrary to all the precepts of morality, justice, democracy, freedom, private enterprise, and faith, and it would destroy the foundations on which the dignity of the individual is based. Thus would speak the weasels and vultures of the Price System.

In order to silence the weasels and vultures, it would be necessary first to institute a program of Total Conscription, requiring national service from all and permitting profits to none. Once the United States and Canada took this step, they would be able to proceed with building a program of defence and reconstruction for this Continent without the interference of politicians, businessmen, and moralists. This Continent would then be governed by those who are qualified to govern —the scientists, technologists, engineers, and technicians.

After this step were taken, no construction or defence job on this Continent would be too large or too difficult for North Americans.

—Wilton Ivie

★ ST. ANDREWS-BY-THE-SEA, N.B.—Over-all economic and industrial activity in Canada has reached its peak and is levelling off, President W. J. Borrie of Vancouver told the annual meeting of the Investment Dealers' Association of Canada.

He suggested in his annual address it is 'unlikely that defence preparations will proceed as scheduled' unless another 'hot spot' such as Korea appears. Canada's dynamic expansion program undoubtedly had been accelerated by the defence program, but a sense of urgency no longer existed. —*Canadian Press*

OTTAWA.—Sir John Cockroft, Britain's top atomic expert, said in an interview here that Canada's atomic pile at Chalk River 'is far and away the best in the world and is likely to be for several years to come.'

The Push-Button Factory

An address by Frank K. Shallenberger, associate professor of industrial management, Stanford University, presented before the 1952 *annual assembly of the Engineering Institute of Canada. It discusses the possibilities of the automatic factory.*

SIX years ago, two Canadian physicists, Eric W. Leaver and Dr. J. J. Brown, wrote an article for **Fortune** magazine showing how electronic controls developed for military use might be used to control factory machines and processes and thus make possible the push-button factory of the future, the automatic factory, where all work would be done by machines without operators, where the only attendants would be observer-technicians.

They devised an automaton, a hand-arm device, directed and controlled by a punched paper tape, which would automatically load, operate and unload the machines. They proposed devices to inspect, move and assemble parts. They indicated how with a new set of tapes and a little rearrangement, the plant might shift from one product to another—for example, from vacuum cleaners to electric motors.

The automatic factory has become one of the most challenging subjects of discussion in engineering and management circles today. The last issue of **Factory** magazine was devoted to it.

Actually, the idea of automation is nothing new. It is the logical and ultimate result of imaginative methods study and uninhibited machine design. In its broadest sense, anything which substitutes mechanical, electrical or other devices for human guidance and control is a form of automation. The automatic feed or cam which advances the tool and the template which guides it, the pneumatic cylinder which clamps, indexes or positions the work, the hopper which feeds the machine, the conveyor which takes the finished work away, the elaborate electronic device which directs, coordinates, controls a series of complex operations—all these are examples of automation and as such are steps toward the push-botton factory.

The term 'automation' is of post-war vintage, but to discover its beginnings, we must go back even before there was any real American industry, to 1784, when Oliver Evans built the first mechanized factory just outside Philadelphia, a continuous flour mill. This mill incorporated the three basic types of powered conveyors in a continuous production line, unloading the grain from boat or wagon and processing it to finished flour without human aid. In 1833 biscuit manufacturing was mechanized in the 'victualling office' of the British Navy and in 1869 endless monorails were introduced into the meat-packing industry. These were designed for **dis**assembly of hogs, but they were the forerunner of the modern assembly line.

Henry Ford first used progressive assembly on a powered conveyor in 1914, the same year in which he offered $5 for an eight-hour day in an industry where $2.40 for a nine-hour day was standard. That he was successful in doing both is indicated by the fact that his original investment of $28,000 grew to three-quarters of a billion dollars by 1927.

Many process and chemical companies achieved a considerable degree of automation in the twenties. So did manufacturers of such products as electric light bulbs, cigarettes, bottles and tin cans. The most dramatic of all was the A. O. Smith Company, which in 1920 built an automatic factory to make automobile chassis — a plant in which strip steel was blanked, formed, assembled, riveted and painted, producing a complete chassis every 10 seconds, ultimately 10,000 per day. The few workers present served not as producers but as observers and trouble shooters. A more recent milestone was the construction in England in 1948 of two machines to produce radio sets automatically.

But the automation is not limited to completely automatic plants. The automation of segments of industry and of individual machines is much more widespread and much the same in its economic and social effects. The lathe was little more than a woodworking novelty until it was given a mechanical hand to hold the tool. Henry Maudslay in 1797 gave it a lead screw, in effect a cam to control the movement of the cutting tool along the work.

Today we have the automatic screw machine on which cams advance the stock, change spindle speeds, index and feed the tools to the work.

The same story may be repeated for automatic drilling and milling machines, for punch presses which feed automatically through progressive dies, and for grinders which feed and eject stock and adjust themselves automatically for wheel wear. We have machines guided automatically by templates and even some guided by a line on a blueprint. During the war we witnessed the development of the transfer type machine which combined both machining and materials handling. Raw forgings entered at one end and merged as finished cylinder heads at the other. These were actually a number of machine units automatically coupled together and centrally controlled.

As machines become more automatic, emphasis shifts to **materials handling**. The word 'automation,' as originally coined at Ford, means automatic transfer of parts between machines. Ford has had an Automation Department since 1947, and one has only to look at the 'iron hands' which load and unload mammoth presses, conveyors which carry cylinder blocks through complete processing without human direction, hoppers and chutes which load grinders or other machines and transfer devices which carry forgings through successive press operations, to realize the effectiveness of this department's efforts. Machine time seems destined to be greatly shortened by current developments in metal cutting techniques and coolants and in many instances has been eliminated altogether by die castings, investment castings, shell molding and powdered metallurgy. The result will be an even greater relative emphasis on the automatic handling of materials.

Inspection has also been automatized extensively. Automatic devices count, inspect and sort by weight and color and dimension much more rapidly and reliably than any human could do. They check performance, seek foreign metals or internal defects, detect over- or under-filling of cans and bottles. Both Ford and De Soto have crankshaft balancing machines which measure out-of-balance conditions, then automatically drill out material from the

right spot to remedy it. This will be characteristic of the automatic plant; inspection devices will not only detect defects but will remedy them or pass the information back to previous machines to avoid repeating the error.

Assembly operations have not been so extensively mechanized, although we have continuous brazing, welding, automatic riveting, nailing, cementing, filling containers, packaging, painting, plating, and the like. Leaver and Brown described in general terms a machine to assemble a telephone receiver automatically.

The great dream of the future is **electronic control.** Why, we are asked, can't electronic devices developed by the military to control the flight of aircraft, to guide unpiloted missiles, to direct the firing of guns, be used to control industrial processes? We have devices which can see better, hear better, measure better than humans. They are more reliable, more powerful, more precise, think and move faster than human operators. They never tire, will willingly work around the clock, don't make mistakes, don't talk back, are obedient and fully predictable, have few personal problems and they won't go on strike.

Actually, many electronic devices are already in industrial use. There are simple circuits which through a sensor unit, such as a photoelectric cell, pick up an impulse, amplify it and pass it on to an effector unit, such as a valve or motor, for appropriate action. There are the complex computers and servo-mechanisms which can solve involved equations and translate the solution into automatic control of complex processes. There are others which can translate and use information fed in on a tape or card. It is the ability of such devices to think, choose, and remember, to move accurately and with great speed that makes them the key to the factory of the future. One of the most important characteristics of electronic controls is their ability to utilize the principle of 'feedback,' a sort of built-in supervision, which insures that the unit has carried out the orders exactly as they were given it. Thus tolerances become a matter of little consequence. The versatility of electronic controls is almost without limit—there are few if any production jobs which they could not perform.

To me the striking thing about automation is not what **can** be done in the future, but rather how little **has** been done in the past. There are thousands and thousands of jobs now performed by human workers that could be performed more accurately, more efficiently and much more cheaply by automatic means.

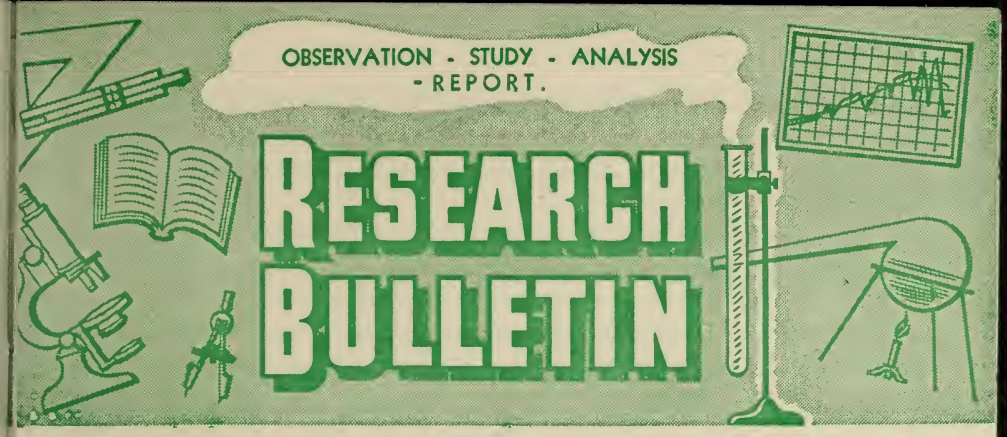
Why haven't industrial engineers taken greater advantage of these opportunities? The answer seems to lie in limited capital, lack of knowledge, lack of imagination, inertia, and misguided economic thinking. In many small plants, funds are lacking even for the simplest automatic devices. Whatever the potential payoff, there always seems to be some other need more acute. In other situations plant management simply does not know what is available, what can be done, has not had the time to sit back and evaluate the developments that have taken place.

Many offer the alibi of low volumes, changing markets, non-repetitive operations. Certainly transfer machines, custom-built conveyors, automatic loading and unloading devices are too specialized and too expensive for their needs. But examine this further. In the first place, you can buy whatever fits your pocketbook and your needs. If the stakes are high, you can pull out all the stops and make the job fully automatic. But there is nothing sacred or necessarily desirable in 100% automation. Circumstances may warrant making the job only 50% or maybe 10% automatic.

You need not always sacrifice flexibility for automation. The new Magnadrill, for example, has drill heads which can be quickly and easily positioned at any angle for cycled multiple drilling. Keller Airfeedrills, which fasten directly to the drill jig, can be readily converted to other jobs. Pneumatic pistons can be switched from one job to another.

General Electric has developed an automatic lathe equipped with 'playback' control. As the machinist makes the first piece, his operations are recorded on a magnetic tape. The tape can then automatically direct the movements of that lathe or any number of others so equipped. The Arma Corporation has developed an automatic lathe directed by a punched paper tape similar to a

(*Continued on page* 33)



AUGUST, 1952 *Compiled by Editorial Staff* No. 90

Bigger Crops, Fewer Men

REMEMBER Henry Wallace and the Plow-Under of the Little Pigs? Well, there's been a plow-under of farm labor, too.

Reduced to its simplest terms, the situation is this: Since the early 1930's we've increased farm output nearly 40% and, at the same time, released 30% of the manpower (and womanpower) needed to grow crops. Those workers have left the farm and are now finding their livelihood in trade and industry.

It all goes back to Automatic Amos, the Rube Goldberg of farm folklore. Remember him? How he hitched the cows' tails together so that swishing at flies powered the new milking machine he had invented? ('Biggest thing since the McCormick reaper. . . Only thing is, how to git cows onto it.')

Amos didn't stop there. When the cow stepped into her stall, her weight on the floor boards started a belt that brought hay down from the mow. The same belt, with a little counterweighting, carried the milk buckets to the milkhouse.

Revolution — Mechanization — on this somewhat more practical

level—explains why today's farms give jobs to only 7-million people (monthly average for the year, including the boss farmer himself). The switch from horses to tractors revolutionized even the sources and spreading of fertilizer.

As recently as 1910, farmers and farm laborers made up more than 30% of the country's labor force. Now they total only a bit over 10%.

All this has been tremendously important to industry as well as to the farmer. Harry Ober in the Monthly Labor Review for July, 1950, summed up the trend:

'The past 50 years have witnessed extensive mechanization and improvements in farm methods. These have resulted in increased productivity and increased the availability of farmers for industrial employment. In fact, because of the higher birth rate on farms and the continued decline in farm labor requirements, the farm population has become a major source of industrial labor supply. Recent developments in mechanization of cotton picking and accompanying changes in cotton cultivation and other preparatory steps presage further important shifts of farm youth into industrial employment.

'In the absence of extensive industrial training in farming regions, the flow of labor from these areas has been and is likely to continue to be mainly into unskilled and semiskilled occupations.'

New Qualities—There has been a change in the number and size of farms, too. The 6½-million farms of 1920 embraced 950-million acres of which 350-million acres were cultivated. The number of farms since has declined to about 5.8-million with about 1.2-billion acres. But we're getting our increased output from just about the same area —little more than 350-million acres of cropped land through more extensive cultivation.

Though the tilled acreage is little changed and farm production is up nearly 40% since the '30's, the man hours of labor have declined by 14%. Roll man hours and output into one index, and you get better than a 60% gain in output per man hour over that period. Take it back to 1920, and man-hour output has doubled.

Other Factors—It isn't just a matter of more and better machin-

ery. Nor is it due solely to consolidating a lot of small farms into huge crop factories under single managements.

Better seed and steadily increasing use of commercial fertilizer have been of the utmost importance in raising productivity. Science also has contributed new bug killers, fungus killers, weed killers. Spray now can be used for such things as defoliation—as in removal of leaves from cotton plants to facilitate mechanical picking.

Power Package—On the mechanical side, the big advances have come hitched to the tractor. The all-purpose tractor has kept the family farm competitive. And larger units roar their more specialized ways across the agricultural economy.

From less than a million farm tractors in the early '30's, the number now has risen almost to 4-million. (That's nearly three-quarters of a tractor per farm; when you allow for joint ownership and for farms that can't afford any mechanization, the tractor market is pretty well stocked.)

Pulled by these tractors are just about everything from plows and harrows to cultivators and harvesters. And, if they aren't in the field (and if farms aren't electrified), these tractors can power machines of all sorts.

Mechanization Spreads — Some other samples of the technical change: Grain combines have come from 200,000 to total 800,000 in 20 years; corn pickers from 100,000 to half a million units; farms with milking machines rose from 100,000 to 655,000.

As recently as 1946, there were only a few experimental models of the spindle type cotton pickers and a few thousand of the strippers used in the semi-arid regions of Texas and Oklahoma. Estimates put the number now at 7,300 pickers and 14,000 strippers.

So far, a weed problem has held back mechanical picking of cotton. Growers in the humid areas still keep field hands for hoeing, so the same people are used for hand picking, too. Flame weeding still has its problems; mechanical control may prove the answer.

Fewer Backaches—Along with mechanization, some of the backbreak has been taken out of farm labor. Typical are the hay loaders and pickup balers, and the harvesters for crops such as potatoes, sugar

beets, and peanuts. A development that holds great promise is the field chopper for forage. **—Business Week**

Sunlight as Man's Future Slave

WASHINGTON.—The possibility of vastly increasing the earth's food supply, producing natural gas out of water and sunshine, and converting sunshine directly into electricity—all amounting to a scientific revolution of unparalleled magnitude which would have effects on human life that hardly can be exaggerated—may come from experiments reported to the American Association for the Advancement of Science by Drs. Dean Burk and Jerome Cornfield of the U.S. Public Health Service, and Martin Schwartz of the University of Wisconsin.

It has been rumored for some months that these men were on the verge of a momentous discovery, equal in significance to the discovery of the fission of uranium in 1939 which led directly to the atomic bomb and to hopes for an 'atomic age' which appear to be fading rapidly. Recently an authority as eminent as James Bryant Conant, president of Harvard, addressing the American Chemical Society, threw cold water on the likelihood of getting much more out of the atom, and predicted that man's future hinged on better utilization of sunshine. This line of thinking, it can be stressed here, has been shared for some time by some of the most eminent thinkers in American science. They perhaps were partly influenced by reports they had heard of the progress being made by Burk and his associates.

A full preliminary report of the work has been published in the **Scientific Monthly**, official journal of the American Association. It is extremely complicated, and is described largely in mathematical terms which cannot readily be translated into ordinary language.

The findings deal with photosynthesis, the cornerstone of all life on earth. It is the process by which plants convert carbon dioxide from the air and water from the soil into carbohydrates—starches, sugars, cellulose, and so forth—which constitute the basic food of all

living things. This is accomplished through utilizing the energy of sunshine by means of chlorophyl, the green pigment in leaves.

The process involves the liberation from each molecule of water of one atom of oxygen. This is the chief source of the oxygen in the atmosphere, which also is essential for all higher life.

This process goes on continuously all over the earth where vegetation grows. It never has been completely understood. Previous efforts to follow the process have ended in paradoxes. It has been estimated that the process, even with the most advanced agricultural practices, is somewhat less than 1% efficient in the utilization of solar energy.

The experiments of Burk and his associates demonstrate that, under certain ideal conditions, at least one step of the process—the release of the oxygen from water, which is basic to everything else—can be made very close to 100% efficient.

The next steps necessarily are up to engineers, chemists, biologists and physicists all over the world. The work here represents at least as great an advance toward complete utilization of solar energy as the original fission of uranium did toward atomic energy. Since there cannot possibly be any significant military application, it is assumed that there will be free publications of the result of the experiments in all countries.

The findings of Burk and his associates resulted from rapid alterations of periods of darkness and intense illumination. Per se, they probably are not of much immediate practical importance. The great significance of the work is that it goes most of the way in solving the riddle of photosynthesis itself. With this knowledge in possession of scientists, the possibilities are infinite.

Said the authors of the report: The findings regarding 'the conditions necessary for maximum efficiency at both high and low light intensities present many interesting possibilities for practical application. Engineering methods of food production may be developed to make far more efficient use of solar radiation by utilizing some form of intermittent illumination along lines suggested in this report.

'An understanding of the basic mechanism of photosynthesis holds

promise not only of increasing food production per unit of light, but of the utilization of solar energy in many other ways. Thus it might be possible to break water down directly into hydrogen with sunlight.

'Such a process would eliminate mankind's present dependence on exhaustible supplies of natural gas for energy, and would substitute a photochemical process giving hydrogen gas that could be made in any part of the world possessing water and sunlight. Similarly, now that the reaction is definitely known, investigation of the direct conversion of sunlight to electricity is possible.

'The laboratory fission of uranium revealed the possibility of utilizing the binding energy of the atom. Basic understanding of photosynthesis mechanism at the laboratory level may open the possibilities of utilizing another vast and largely untapped source of energy—sunlight.'

It is significant that Conant and the dean of American physicists, Dr. Robert A. Millikan, both have expressed grave doubts as to the value of atomic energy. Both have stressed that, even should it be achieved, it would be too costly to be of much value, but, as Conant stressed, the energy of sunshine is free. Man needs only to know how to use it.

Burk and his associates have gone a long step forward in this direction. **—North American Newspaper Alliance**

Putting Mechanical Brains to Work

WASHINGTON.—So many electronic brains are being created that scientists now are trying to figure out ways to make the best use of them.

About 47 of the giant-sized computers will be in existence within a year. It was in 1946 that the first one, called ENIAC, was created at the University of Pennsylvania.

Scientists foresee the time when the job will be to figure out what task the 'brains' should perform in order to work in the most useful fields and not overlap one another.

The National Bureau of Standards here recently was the scene of a country-wide gathering of mathematicians, physicists and other scholars who father and employ the machines. They talked about the general problem of the usefulness of the work the devices are now doing and about coordinating their future work.

The machines, whose tubes, wires and operating consoles fill a large room, do such a staggering amount of mathematical work that scientists are now able to make many computations that formerly were so laborious no one had time to work them.

Many commercial concerns and universities, as well as the Bureau of Standards, now are producing the machines. The costs range from $500,000 to $1,000,000 each.

The government is the chief buyer. The machines are used by the Atomic Energy Commission; by the military services, for work on guided missiles, ordnance and aeronautics; by the Census Bureau; the Army map service, and the Air Force comptroller.

The first super-computing machine was produced at Harvard University just before the Second World War. Called the Mark I, it could do prodigious feats, but it was mechanical, not electronic. ENIAC, the first all-electrical computer, could work 100 times faster than mechanical machines.

A typical electronic computer, for instance, can multiply 21,832,-119,574 by 93,106,911,225 in three one-thousandths of a second.

Here are the machines, besides ENIAC, now operating or being built:

SSEC, the second one, built by International Business Machines in 1948 and now operating at IBM'S New York headquarters.

EDSAC, the first giant electronic English computer.

EDVAC, a University of Pennsylvania product, the principles of which are now being used in many other machines.

SEAC, which the Bureau of Standards completed in 1950 and now operates here.

SWAC, another bureau machine in Los Angeles.

MARK III, a Harvard product.

Whirlwind, of Massachusetts Institute of Technology.

IAS, by Princeton's Institute for Advanced Study, called the JOHNIAC by some whimsical scientists after its chief creator, Dr. John von Newman, the mathematical wizard.

MANIAC, which Atomic Energy Commission scientists at Los Alamos, N.M., recently announced, is the newest one. The AEC men say MANIAC is the fastest of all.

The names of the machines represent initials, SEAC, for instance, stands for Standards Eastern Automatic Computer. **—United Press**

Solar House-Heating

THE walls hang like window curtains. Heat comes from the sun. Floor to ceiling windows cover the entire front of the unusual house built by and for Mr. and Mrs. T. Harry Milliken near Philadelphia, Penn.

It took four years for Architect John Dickey to draw the plans and two years to build. Dickey explains:

'We began with the floor. Then the roof slabs were placed on the earth in such a way that the frost could buckle them all it pleased and they'd drop back in shape again.'

Milliken decided on the 'different house' six years ago—and insisted he'd build it himself.

Nothing was too unconventional for planners Milliken and Dickey to consider, provided it would cut down work for a one-man construction gang. And provided, too, that it made sense scientifically.

Bricks and mortar were rejected as 'too slow and too expensive,' Milliken said. He is an assistant research director at Houdry Process Corporation, an engineering firm.

After the floor was put in place on the big lot in suburban Moylan, a workman — with the Millikens themselves assisting — built two cement-block interior anchor walls. Eight steel posts wired with magnesium anodes to prevent rusting were connected to the anchor walls. Prefabricated steel beams were attached to the posts.

The roof came next, laid atop the steel beams. Mrs. Milliken did the caulking and covered it with three coats of aluminum paint.

The walls, light and inexpensive, were hung from the beams instead of being built up solid from the ground. They were made of an interior layer of plywood, and exterior layer of stainless steel with cork sandwiched between. Says Dickey:

'This house is the only one I know of, except two experimental models in Massachusetts, that is heated entirely by the sun.'

A so-called 'solar pick up' was built in the backyard. It's a contraption that looks like a group of television antennas.

'Plastic lenses focus the sun's rays on three pipes filled with anti-freeze,' Dickey explained. 'Electric motors keep the 300 feet of lenses facing toward the sun.'

The sun-heated anti-freeze heats the house this way: It is pumped through 15 tons of Glaubers salt stored in long t a n k s beneath the floors. The colorless, crystalline sodium salt melts as it is heated, absorbing enough warmth for seven sunless days. Air circulating around the tanks picks up heat, as in a furnace, and the heated air is then blown under the floors.

The floor-to-ceiling windows, too, provide heat through the sun's rays. In summer an overhang shuts out the sun. Mrs. Milliken says:

'I was skeptical about the long windows at first, but now I agree they certainly do make sense.'

Mrs. Milliken was also suspicious—at first—of the foot p e d a l s that turn the water on and off in the kitchen and bathroom.

Dickey estimates the unusual house cost about $20,000, including built-in furniture. He adds:

'But it would have cost at least $45,000 if it hadn't been for the owners' manpower.' **—Vancouver Daily Province**

★ WASHINGTON.—The United States, reporting progress on atomic-powered submarines and aircraft, has launched a new project: development of giant atomic-powered warships.

The Atomic Energy Commission announced it has asked Westinghouse Electric Company to develop an atomic engine capable of propelling 'large vessels such as aircraft carriers.' *—Canadian Press*

Through The Technoscope...

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

CANADA IS SPEEDILY REACHING the threshold to a new and advanced research process which could conceivably turn her into one of the world's greatest producers of natural and synthetic oil. The process involves the breaking down of coal and tar sand under extremely high pressures in a new type of pressure plant, devised by Canadian scientists. Now under construction in Montreal's outskirts, the plant will be installed in the fuels laboratories of the Federal Department of Mines shortly.

A COAL-FIRED GAS TURBINE ENgine operating at half the cost of its diesel counterpart is the dream of Canada's coal industry. Experiments on the turbine have started at McGill University under Prof. Donald Mordell. A pilot plant based on the principles of the engine is expected to be completed within six months.

A NEW ELECTRICAL METHOD FOR measurement of soil moisture which promises to serve as a guide for the most economic method of irrigation was decribed recently by a Michigan State College Professor. Dr. George J. Bouyoucos, research professor of soil science, told the 26th annual colloid symposium of the American Chemical Society the device will enable farmers, fruit growers, greenhouses, and golf courses to determine when irrigation is necessary, how much water should be applied and how deeply the water penetrates.

He described the 'heart' of the moisture measuring equipment as a water-absorbent block made of plaster of paris or nylon and containing two electrical terminals. The block is buried in the soil and a continuous record of moisture content can be made by means of resistance-measuring electrical instruments connected to the block.

A PORTABLE UNLOADER WHICH can be wheeled up to small-and medium-size presses for automatic removal of small parts is in production at the Sahlin Engineering Co., Birmingham, Mich. It can be adjusted up and down to reach various die levels and can be set at any angle required.

Automatic operation is featured in two new packing machines. One, to be unveiled at the Western Packing and Material Handling Exposition in Los Angeles this month, is the gluer and sealer known as the Standard-Knapp machine, manufactured by the Portland, Conn., division of the Hartford Empire.

The machine can be set up to handle

two sizes of products. In other words, after the partitions have been placed in cartons and the bottoms automatically glued, a change-over can be made in a half hour for cartons designed to handle a different-size product.

Packing Machinery Co., Springfield, Mass., has introduced its 'Tray - Lock' machine which produces a tray with glued tabs and has an adjustable speed of 34 to 90 trays a minute.

The machine handles a wide range of sizes; and change-over for a different size of tray is a relatively simple operation. Trays are delivered right-side up, ready for filling.

NEW TECHNIQUE OF 'HOT RADIOgraphy' permits taking of X-ray photographs of pipes, valves and similar units at temperatures up to 1200 deg. Fahrenheit. The process makes it possible to check on welds on hot pipes (which formerly had to be cooled before inspection).

Hot radiography involves use of a special film holder through whose hollow chambers a cooling fluid is circulated that protects the film's emulsion from heat of the welded section. Sam Tour and Co., Inc., New York, holds exclusive licensing rights on the process.

AN ELECTRONIC LAWN MOWER that cuts grass by itself has been invented by Raymond P. Meyer of Omaha, who built everything but the engine and wheels for it. The mower is pushed once around the yard to set the route, then it is on its own. It prefers tall grass and on clipped lawns will circle aimlessly looking for work.

The machine has a feeler wire in front which sends out electric impulses that are interrupted by grass higher than 2½ inches. It weighs 50 pounds and cuts an 18-inch swath.

PRECISION-FORGED GEARS, MADE by a German-developed non-cutting process (for which patent is pending) can be produced to tolerances of a few hundredths of a millimeter on forging presses of up to 700 tons' pressure.

These gears can, it is claimed, be used for many purposes without any machining of the teeth. In the new process the hot blank is brought to the forge free of scale; after forging, the usual heat treatments, such as isothermal annealing, are necessary.

Savings of 35 to 40 per cent on labor and material are claimed for this method. Henley and Co., New York, is licensing the process on a non-exclusive basis.

NEW WAYS OF EXTRACTING COPper, nickel, cobalt and other important metals from ores by chemical rather than the usual smelting and refining methods have been announced by Chemical Construction Corp., New York. The processes are described as 'basically new and revolutionary' and are said to be the result of seven years of research by the company, a subsidiary of American Cyanamid Co., and four years of research and pilot plant work by Sherrit Gordon Mines, Ltd., a Canadian nickel producer.

MANCHESTER UNIVERSITY SCIENtists are planning to build the world's biggest 'radio telescope,' a device con-

sisting mostly of aerials which will enable it to pick up radio-type impulses from invisible 'radio stars' and plot their positions.

A MACHINE WHICH TRANSLATES one language into another at the flick of a switch is being developed at the University of Washington. Prof. Erwin Raifler, developer of the machine, has been awarded a grant from the Rockefeller Foundation on the princple of an electronic brain which can make complex mathematical calculations in seconds. In the professor's machine, the electronic memory apparatus will be used to store the words of a translating dictionary so that a text fed into the machine will come out translated according to the dictionary's definitions.

SCIENCE PASSED A HISTORIC milestone recently at Upton, N.Y., on the road to solving inner secrets of the atom and atomic energy. For the first time, a man-made machine fired atomic bullets at energies or power exceeding 1,000,000,000 electron volts. This means science is assured of powerful new bullets to use in probing the inner secrets of atoms and their parts, and the energy that holds the cores of atoms together.

★ VANCOUVER.—European scientists claimed here that they have developed an electric power converter that will produce aluminum cheaply, improve radar and television, break rocks or attract fish.

The new electric energy is being used to produce pure aluminum at the pilot plant of the British Columbia Aluminum Company in New Westminster, said Danish-born President Alfred Vang.

He said the new type of 'quantum' electricity utilizes a 'square' wave of current instead of the usual alternating and direct current systems. 'It is a means,' he said, 'of ultra efficent use of electricity.'

The magnaquanta converter, as it is called, has power to attract fish of different sizes and species and to stun them for 'milking' or for transfer to hatching or spawning beds.

Mr. Vang explained the new system involved shortening of the time lag involved in producing electric energy. Both alternating and direct currents now turned out by big generators required time to build up to peak production and time to drop back to zero production in each impulse. —*Canadian Press*

★ OTTAWA.—The government's uranium-refining company expects to produce this year six more radio-active cobalt bombs for treatment of cancer.

The first bomb produced by Eldorado Mining and Refining Company—a $48,000 unit that does the job of $45,000,000 worth of radium—has been installed at Victoria Hospital in London, Ont.

A second bomb has been installed in the University of Saskatchewan at Saskatoon. —*Canadian Press*

★ PARIS—A first flight was made by an aircraft weighing 870 pounds, claimed by its makers to be the world's tiniest jet job and the first jet-propelled tourist plane.

Known as the SIPA 200, it is 16 feet long, has a wing span of 23 feet, is powered by a single turbojet, can speed at 217 miles an hour and has a range of 280 to 435 miles. —*Reuters*

(*Continued from page* 20)

player piano roll. On demonstration, 'this lathe turned out in four minutes a piece which would require a skilled machinist 30 minutes, referring to blueprints, to produce. It took only 15 minutes to punch the tape, and tolerances were held to 0.0003 inches! Neither of these machines is yet available, and since they are not equipped with turret heads, they are probably limited to fairly simple parts. But the same control principles may some day substitute for cams on automatic machines of all types to make highly versatile yet highly productive equipment. The next step will be to connect these, or automatic machines already available, with automatic handling devices, electronically tie in inspection and assembly and the automatic factory will be a reality.

Some of the hesitancy in automatizing processes and operations comes from a feeling that electronic controls are unreliable and expensive. Past experience has justified that belief. They have been fragile and temperamental. In most cases they must be engineered specifically for the job.

But recognize first that electronic control is not always required. Mechanical means (cams, templates, pneumatic or hydraulic pistons) or electrical devices (thermocouples, limit switches, relays, solenoids and the like) can often do the job. Our students are developing an almost completely automatic shell-molding machine without using any electronic controls whatsoever. The cost of the control mechanism will be less than $300, yet it will enable one man to run several machines instead of one.

Military demands are leading to electronic controls which are much more reliable and less expensive. New developments in miniaturization; in printed circuits (which in themselves offer tremendously fascinating possibilities for automation); in circuits imbedded in plastic; in transistors, which will substitute for vacuum tubes, traditionally the least reliable electronic component; and in unitized circuits, in which whole plug-in segments can be readily replaced; with these, electronic controls can be as reliable and as easily maintained as the machine itself.

Inertia is another deterrent to automation, especially in a period

of easy profits. Still another is business uncertainty. Another is the type of management thinking which keeps equipment operating long after it is technologically obsolete. It is usually easier to obtain funds to keep an old machine running than to purchase a new unit, especially if the old machine still runs well and shows a substantial undepreciated value on the books. But it must be evident, to anyone who will exercise the most elemental logic, that book value is in no way relevant to the question of whether or not a machine should be replaced. Obsolescence is the result of technological change and not affected by accounting procedures. Whether the machine is one year or 20 years old, the question of whether or not it should be replaced with a better machine depends entirely upon comparative performance in the future, not upon bookkeeping entries of the past. As a rule of thumb, Ford assumes that automation tooling is justified if it will increase production and if its probable cost will not exceed $3000 per man transferred. The figure is low to insure a write-off within the model year. Most plants insist on a payoff within three to five years. The intangibles and unpredictables usually make for a much faster writeoff.

Labor groups have in many plants retarded technological progress by insistence on former piece rates, prohibitions on the assignment of workers to more than one machine and outright obstructionism. At the same time, the increased cost of labor is without question one of the greatest incentives to increased automation, and the higher labor forces wages the more the likelihood of replacement.

What is the future of automation? One tries to be logical and realistic in appraising the prosperts, tries to avoid the temptation to overrate the possibilities. And like being a poor lawyer, it is far easier to be a poor engineer, easier to find reasons why it cannot be done, rather than ways in which it can be done. But there is danger in being too logical. The famous individual who resigned his position in the U.S. Patent Office because there was nothing left to invent was attempting to be logical.

When I look around at Western plants I see many where the volume, the type of product or the

lack of finances make automation of any magnitude almost impossible. On the other hand, when as a consumer I look at the articles I buy, many of them (such as pens, pins, pencils, lamp bulbs, cigarettes, bottles, nails, paints) already produced by automatic processes and others (hardware, clothing, toys, plumbing fixtures, plastic products, radios and television) which could be automatized, I lose any fears of overstating the possibilities. Certainly there will be many plants which will never enjoy extensive automation. There will be many products which will, for purely economic reasons or by customer demand, continue to be made by non-automatic methods. Yet every plant will have some degree of automation, and I cannot doubt that the vast majority of the things we eat and use and wear will be made in plants where the only workers will be technicians, not producers. These will not always be products as we know them today, for automation very often requires new materials and complete product redesign.

In assessing the prospects for automation, we must broaden our sights far beyond manufacturing alone. The punched card, which may some day run our machine tools, had its beginning and greatest development in the clerical field. It has recently been predicted that electronic brains will 'keep business accounts, run continuous sales records, compute and send out bills, handle entire payrolls, keep running inventories, fix production schedules, serve as vast filing systems, and chart corporate expansion,' all without human aid. In retailing there is no reason why electronic circuits could not automatically record each sale, check credit, bill the customer, post balances, reorder if necessary, and give management a continuous and up-to-the-second accounting of all operations. For a long time we have had 'Automat' restaurants in New York. In 1948 the 'Keedoozle' food store opened in Memphis, Tennessee. When the customer enters the store, she is given a 'key' which she inserts in a slot beneath each item she selects from the glass display cases. Each selection is automatically coded on a punched tape. When she has finished, the tape is fed into a 'translator' which totals the bill and releases the merchandise

from long chutes onto a conveyor. This in turn carries the order to the packing stand.

With increased air traffic congestion and travel at supersonic speeds, the shortcomings of human control become critical. Automatic electronic controls are not subject to such shortcomings, and it is reasonable to believe that they may some day take over full control of aircraft in flight. The same may be true of rail, ocean and other transportation. Computers are already used to handle plane reservations in large centers.

The possibilities in agriculture are tremendous. Early this year a Senate subcommittee estimated 'conservatively' that chemicals alone would displace more than 1,500,000 farm workers in the next 10 years, and almost 3,500,000 (or a third of our farm jobs) over the next 20 years. Chemical weed killers can do in 12 minutes what it would require 20 hours to do with a hoe. Chemicals can prevent premature shedding in fruit trees and increase yield. Others can induce shedding and replace hand thinning. Chemicals can destroy the fix foliage to hasten ripening and facilitate machine or hand picking. Fungicides, growth hormones, and soil conditioners will help increase crops. Most cotton is already picked by machine. One of our western electronic companies is currently field testing an electronic crop thinner, which automatically detects and removes unwanted plants, four rows at a time. The experiments conducted by the Bureau of Mines in burning unmined coal underground in its natural seams may lead to another form of automation.

What will be the impact of automation on our society, our economy, our way of life? Historians may well point to automation as the heart of the second industrial revolution. There will without question be a greatly accelerated use of the automatic factory in the near future. A much higher standard of living or a shorter work week or both are likely when and if automation reaches its full potential.

It behooves every one of us—engineers, management, sociologists, economists, to read and think and discuss the subject at every opportunity so that we can foresee and avoid the pitfalls, minimize the mistakes and disloca-

tions, and make an economic and social asset, not a Frankenstein, of the push-button factory.

—Dr. Frank K. Shallenberger

★ CLEVELAND.—When the world's factories become automatic (and experts believe the time is rapidly approaching) the origin of the development perhaps will be traced in part to efforts of the Wean Equipment Corp. here.

The firm, which now turns out those huge, intricate, automatic, multiple-operation machines, started on its present task in 1940, when it took over the old Broden Construction Co. From then until 1946, Wean continued to turn out steel mill and wire-drawing machinery.

However, in the past six years the company has turned to 'monster' machines which do dozens of operations at one time with 'extreme accuracy.'

Two outstanding examples of the company's achievements along this line are the 'Queen Mary' and the 'Queen Elizabeth.'

The 'Queen Mary' was made for the Cadillac tank plant in Cleveland to hasten the manufacture of Walker bulldog tanks. This particular machine grinds smooth 10 surfaces of the tank's hull in one slick operation which previously was done in 10 steps and took 20 times as long.

The 'Queen Elizabeth,' another spectacular time and labor saver, bores 110 holes at once in a tank hull.

The latest addition on Wean's automatic family is a 'trans-car machine line,' built for Massey-Harris Ltd., to be used in that firm's plant in Racine, Wis.

The operator of the 'trans-car' rides on a narrow gauge streetcar which carries the hull of the Army's largest tank. As the 'trans-car,' its driver and the tank hull move down the track, bits and drills intermittently attack the hull to mill 10 different surfaces and drill 110 holes in three continuous operations.

Besides the obvious labor saving, Wean engineers point out that not once during this operation does the hull have to be shifted to another part of the plant or from its original position.

Wean Equipment, under the direction of 30-year-old R. J. Wean Jr., has enjoyed a 200% expansion in the past year. Sales have jumped from $1,000,000 annually to $6,000,000 since Wean absorbed Broden. *—United Press*

★ COPENHAGEN—Eminent atomic scientists from 10 European countries have disclosed plans to build the world's biggest nuclear research laboratory in either Denmark or Switzerland.

The project, announced at the close of a several week long conference of the European Council of Nuclear Science, will be a co-operative venture of France, West Germany, Italy, Belgium, The Netherlands, Switzerland, Denmark, Norway, Sweden and Yugoslavia.

The laboratory will contain the world's biggest cosmotron—an atom-smashing machine—and will take seven years to build, the council said. *—Reuters*

★ BROOKLYN, N.Y.—Robot machinist that can automatically operate a machine tool a thousand miles away by electrical impulses was announced here by the Daco Machine and Tool Co.

'The day of the automatic factory has been brought closer by the robot machinist,' said Al Stauber, managing partner of Daco. *—Associated Press*

The Nazis Come In

Many prominent German Nazis and fascists from other European countries are entering the United States without difficulty. Among them are notorious types who helped gas and otherwise exterminate six million Jews and millions of other faiths.

NAZIS and other with bona fide fascist records are experiencing little difficulty with the United States visa regulations which are keeping from our shores so many distinguished democrats. It is true that there is a paper barrier against fascists. An amendment to the Internal Security Act of 1950 bars all present or former members of 'totalitarian' parties except those who were coerced into joining or were not more than sixteen when they enrolled. But the ninth proviso, third section, of the Immigration Act of 1917, which gives discretionary power to the Attorney General to admit 'otherwise inadmissable aliens applying for temporary admission,' makes the barrier very fragile indeed. Moreover, the Central Intelligence Agency is empowered by Congress to import annually 100 aliens who possess strategic skills. It is not required to divulge their identity.

The ninth proviso and the C.I.A. are affording avenues of admission to some interesting people. Dr. Walter Schreiber, former commanding officer of the Department of Medical Science of Hitler's Supreme Command, to whom some unflattering references were made at the Nurnberg trials, recently arrived to join the faculty of the United States Arm Air Force School of Aviation Medicine at Randolph Field, Texas. Dr. Otto Reuleaux and about fifty other Germans were granted visas to attend an international meeting of industrialists held in New York in connection with a convention of the National Association of Manufacturers. Dr. Reuleaux held the Nazi title of Defense Economy Director and is on the original 1945 War Department list of those who participated in and benefited from the Hitler regime. Some of his colleagues who accompanied him to New York

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were also Nazi Party members and beneficiaries of the regime.

Dr. Andrija Artukovic, wartime Minister of Justice of the Nazi puppet government of Croatia, traveling under an assumed name, entered the United States as a visitor on July 16, 1948. His signature is recorded on anti-Semitic decrees, and he is charged with zealously implementing Hitler's extermination program. His temporary visa was extended three times. To escape extradition, Dr. Artukovic has applied for status as a 'refugee from communism.' Another Balkan collaborator cleared by the immigration service is Viorel Trifa, who participated in the pro-Nazi revolt in Bucharest in 1941 as a leader of the Iron Guard and also played a role in anti-Semitic activities.

Although the Displaced Persons Act expired last December 31, the official machinery has been kept functioning to admit 54,774 additional Volksdeutsche from Eastern Europe. Many of these people, according to Rabbi Irving Miller, ex-president of the American Jewish Congress, 'volunteered for service with the execution squads which gassed and otherwise exterminated six million Jews and millions of other faiths.' When Congress amended the D.P. act in 1950 it provided especially for immigration visas for General Wladyslaw Ander's Polish Corps. Among those who joined Ander's group after the war were such personalities as Roch Mankowski, commander of the Nazi concentration camp at Krems; Father I. Nahajewski, chaplain of Hitler's Ukrainian S.S. division, which murdered thousands of civilians; Dr. Wladyslaw Dering, named on the international list of war criminals for surgical experiments on living human beings at Auschwitz, Henryk Gutman, commander of camps in Austria. Approximately 11,000 visas were issued to Ander's men, who were welcomed under the Statue of Liberty as part of the 'huddled masses yearning to breathe free.'

—Milton Friedman

★ ANN ARBOR, Mich.—William Hobbs, University of Michigan professor, says a new canal across Honduras would relieve congestion in the Panama Canal.

A feature of the project, which he estimates would cost $1,500,000,000 and take five years, would be two channels 146 miles long through which ships would be towed by electric locomotives. *—British United Press*

Design for Living

No one will 'own' their homes in the North American Technate. They will be provided with the best living facilities that technology can construct and they will occupy the premises free of such incumbrances as maintenance, taxes or rent.

ONE of the most highly ballyhooed and obviously transparent examples of Price System propaganda aimed at the individual citizen is that which impels and exhorts him to 'own' the premises in which he lives and all equipment which is directly related to the requirements and comforts of his domestic existence. From the time he is able to toddle and begins to grasp the rudiments of speech, he is barraged with sermons and harangues on the virtues of saving money so that some day he may able to own his home. This achievement, if or when accomplished, is considered to be the acme of individualism—the ultimate expression of man's independence from his fellow citizens.

A closer look at this hallowed institution of private ownership, however, reveals a hollow shell. It manifests society's dereliction of duty in failing to fulfill the purpose for which it was originally instituted—that of helping all citizens who comprise it to meet the exigencies of life which they cannot meet alone. Society had its inception when the first primeval men teamed together to fend off the attacks of wild animals and to search for food. Whether or not they recognized it as such, their act was a denial of the myth of independence. That denial has multiplied proportionately with the growth of society, until today virtually no fragment of genuine independence or individualism exists. This is particularly so in the highly integrated and complex technological society of North America where the lives of 85% of the populace are **directly** dependent upon the continuous operation of the technical equipment. Most of the other 15%, who are only fractionally less dependent, would be unable to survive if the first 85% succumbed.

If the Price System veil of propaganda is brushed aside, we can

see that the vaunted advantages of private ownership are in reality serious disadvantages as far as most people are concerned. The highly mooted but extremely doubtful privilege of such ownership embodies a host of duties and chores which spell tedium to most owners, but are perpetuated either out of a sense of social obligation, or to defray domestic operating costs—or a combination of both. Whichever be the case, the device employed is an attempt — generally futile — to express the concept of individualism. This concept is an integral part of Price System operation, and dissolves under a concentration of scientific analysis.

Let us view briefly some of the characteristics of private ownership as they impinge upon dwelling-house owners. We shall consider the home of an average citizen—one who is unable to hire any servants or other outside help except for highly specialized jobs on rare occasions. The reader may consider himself the owner of this home.

In order to operate at minimum expense, he must attend to all structural repairs himself, despite his inaptitudes if he is not a specialist in such work. He must cut lawns, clip hedges, and otherwise keep his premises in attractive condition. In the winter he must see that the sidewalks adjacent to his premises are cleared of snow. This is generally a distasteful task to most men—except, possibly, the novelty of clearing off the first snowfall of winter.

The lady of the house must wash all the laundry. Though many homes today have electric washers, few have automatic driers so that it is necessary to depend upon the clemency of the weather for drying. If the weather is bad, the clothes must be hung indoors where they interfere with the performing of other tasks.

She must cook all the meals and wash the dishes. (Maybe she can get hubby to dry them.) Also she must keep the interior of the house orderly by sweeping and scrubbing floors, dusting furniture, cleaning windows, etc. There is enough to keep her going for long hours every day, especially when there are growing children in the house. No elaboration is required on that point.

Our home owner must attend to all decorating or redecorating—such as wall-papering, painting of

house, and so on. Whether he does the work himself or hires it done, he alone is responsible for its being done. If he decides to move, he must sell the premises and buy or rent a new abode. Since the furniture is his, he must either sell it or transport it to his new place.

If his home burns, he must bear the full brunt of the calamity itself—the only protection being whatever insurance he is financially able to carry. He must obtain a new home and furnishings with no help from society at large.

For his convenience or comfort, the owner may wish to add certain other items to his household such as a car or radio, or maybe a motorized lawn mower or electric hedge clipper. If this be so, he must 'own' them in order to have them readily available when required, though—as with the mower and clipper—this may be no more than an hour during the summer months. In the case of the car and radio, he must purchase annual licences to permit him to operate them even though he 'owns' them. He must also furnish garage space for the car.

Nothwithstanding his fulfillment of all requirements of ownership and his holding of a deed to the property, the owner must pay an annual property tax to the presiding civic or municipal authority for the 'privilege' of ownership. In default of payment of this tax, he stands to lose his home. A particularly frustrating aspect of this taxation is that it penalizes those who have the most pride in their homes by increasing the assessment as soon as any improvements are made. This situation contributes largely to the multitude of run-down homes which have been neglected or unimproved in order to avoid a tax increase.

Property casts further burdens on the owner in that it ties him down considerably. He cannot leave it for extended periods of time because there are certain jobs which must be done periodically or else they get out of hand. Anyone who has been away from home for a matter of three weeks or more can appreciate this in respect to lawn cutting and the weeding of a backyard garden. (The garden, incidentally, though completely inconsequential and inadequate to any family's needs, is an integral part of the 'private property' picture. No self-respect-

ing (?) home owner would be without one.) Furthermore, he must protect his investment against the depredations of both man and nature, which necessitates one or more family members being fairly close to home most of the time.

The foregoing descriptions of the average urban home owner's problems are in no sense presented as a comprehensive picture. It is merely a sketch, which, though incomplete, will serve our present purpose. Rural home owners may embellish the picture as they see fit.

Two questions now arise: What is the primary purpose of a home, and is all the work and worry connected with it an inseparable necessity to the person or persons living in it?

Obviously, the answer to the first question is that it is a place in which to live—as comfortably as possible, of course. The answer to the second is an unqualified **no**! We shall shortly see that the best living quarters that science and technology can devise could be furnished to every family or individual on the North American Continent without any fuss or bother on the part of the people living in them. But first, let's see what's wrong with a person owning his home and doing all the work connected with it.

In our Price System society, the owner of a home generally does a full day's job earning his living, then comes home to another day's work about the house and yard. It matters not that he's tired and may prefer to relax or turn his attention to some hobby or cultural pursuit. The work has to be done and he is the only one there is to do it. If his wife happens to be working away from home (as is often the case), she also is faced with the inescapable necessity of doing two days' work in one, i.e., preparing meals and lunches, washing clothes, and other housework.

What we are pointing out is that while most people want comfortable and pleasant living quarters, they don't enjoy doing the work necessary to make their homes comfortable and pleasant. They are obliged to perform time-consuming tasks about the home when they would prefer to turn their attention to some creative occupation that appeals to them.

Is there no way out of this dil-

emma of a two-shift day for home owners?

Yes, there definitely is, though the solution cannot be effectively applied on a mass scale within the Price System framework. However, one of our present day modern, first-class hotels affords a limited illustration of the solution on a microscopic scale.

The guests of such a hotel enjoy maximum comfort and convenience with minimum personal concern. The management assumes full responsibility for the high-standard maintenance of the premises. Chambermaids each day make a round of all rooms, cleaning them up, changing the bedding, and readying them for the next guests—or for the same ones if they have not checked out. An efficient room service stands ready (for a price) to meet the guests' every whim, from shining shoes to serving meals in their rooms. It is important to note that the guest owns no part of the hotel's facilities, but merely makes use of them. When he wishes to use them, he checks in and is assigned a room of whatever class he wants. When he is finished with the facilities, he checks out, pays his bill, and that's all there is to it. While there, he has the use of a telephone and radio, and, if he wishes, he can hire a taxi or U-drive to take him around town. The room is always warm, and, if it's snowing, he can **watch** some of the hotel personnel clean off the sidewalks.

All the work in and around the hotel is done by staff personnel engaged in their full-time occupations at certain specific tasks, thus relieving the guests of any responsibility for the maintenance of their rooms or suites. This effect—so satisfactory to the guests—is achieved as a result of organization. Such organization is not possible for the individual home owner, on whose shoulders frequently falls a load too heavy for him to carry. Sloppy homes result very often, even though the owner may be in relatively comfortable financial circumstances.

The favorable results of organization just referred to have been accomplished despite finance and other interfering factors characteristic of the Price System. But they stopped short of their maximum effectiveness because of the limitations of the Price System. The hotel guest enjoyed a degree of liberty which did not

extend to the staff. They were or are essentially in the same position as the home owner who does all his own work after having already done a day's work for somebody else. Indeed, many of them are in that identical position.

If society were organized to effect the maximum utilization of its science and technology—say, on a Continental scale—everyone could enjoy a freedom of movement comparable to that of the hotel guest. This is particularly so in North America where we are endowed with the greatest abundance of raw materials and the greatest array of technological equipment for converting them into use forms, of any place on Earth. In a Price System, however, such equipment can usually be employed only by fairly affluent business firms, for most of it is far too expensive to be purchased by the individual citizen. Hence, an establishment such as a large hotel can buy mechanized floor waxing equipment and all other accessories necessary for efficient caretaking — equipment that is beyond the financial reach of the average home owner, and anyway would not be use often enough to warrant its purchase.

We see, then, that the barriers to the extension of a hotel-like service to all citizens are financial rather than physical. From this it follows that in order to achieve the maximum beneficial effect of the available service, we must abandon the concept of 'property' as an anachronism in a culture of abundance.

'A little reflection,' states the Technocracy Study Course, 'will show that ownership of, or property in, a house consists entirely in what society will allow an individual to do with regard to the house. If the property in the house is Jones', that merely means that Jones is allowed by society to live in the house, to rent the house to someone else, to leave it vacant, or to tear it down. Jones may transfer parts of these privileges to other people for a consideration, as in the case of rental, or he may dispense with the privileges altogether, by sale, by gift, or by forfeiture. In these latter cases, though the house remains, the right of property in the house is transferred to some other person.

'The same line of reasoning applies to any other property. Thus, it becomes evident, as Law-

rence T. Frank, of the Rockefeller Institute, has aptly remarked,that property consists not in a physical object, but in a **mode of behavior** with respect to a physical object.'

If we analyze the situation objectively, we will realize that we are not so interested in 'owning' a home as in using its facilities. Take, for instance, the example of the telephone in the house. We do not own it, but merely rent it from the telephone company which assumes all responsibility of maintenance and connects us with our desired party whenever we place a call. It is only this service that concerns us—**not** an empty legality of ownership.

No one will 'own' their home in the North American Technate. They will be provided with the best living facilities that science and technology can construct—facilities incorporating in their basic design such qualities as thermodynamic heating with complete insulation, soundproofing and fireproofing. The structural framework will also make the premises vibration-proof—a factor which will permit residents of either apartment suites or individual dwellings to make all the noise they please without disturbing others. They will occupy the premises free of such incumbrances as maintenance, taxes or rent.

Conceding the removal of the last-mentioned **incumbrances**, how will that of maintenances be dealt with to the satisfaction of the residents ?

Take the hypothetical case of a man and his wife living in one of the consistently high calibre Technate apartment blocks. Both in their functional service periods —between 25 and 45 years—he is fulfilling his contract of citizenship as a local transit bus driver, and she is a waitress in a public dining room.

When they arise each morning, their routine procedure closely parallels that of a hotel guest in a present day high standard hotel. Instead of preparing breakfast, fixing his bed and trying to clean up the suite, the guest merely dresses, shaves and washes, then goes out for breakfast, and hence to whatever business he has.

Similarly, Mr. and Mrs. X leave the suite as it is when they arise, and get themselves ready for their easy four-hour shifts. If there is laundry to be washed, they merely toss it in a chute which leads

to the basement clearing station where each article is given an identification mark visible only under a special light before being conveyed to the area laundry. Having washed and dressed, our couple proceed to the dining room for breakfast. Afterwards, he reports for duty at the transit depot while she remains at the dining room. Possibly she will now wait table on the same waitress who served her and her husband, and who is now going off duty.

When Mrs. X returns home, she finds her suite cleaned up, the beds fixed, and the laundry returned—washed, dried and ironed. All other tasks about the suite have also been done, so now she has time to devote entirely to her children, or, if she has none, to her particular hobby.

Incidentally, what **will** people with children do with them during their shifts if both parents are employed in outside functions? Will they allow their children to run wild or unattended as happens so distressingly often today? Who will look after under-school-age children while the parents are working?

All residential areas will be well equipped with facilities especially designed to handle this problem. They will be staffed by personnel who have chosen that function because they like children, and who have been trained in all aspects of child care from infancy upward. If the parents wish, one of these persons will come to the home to care for children requiring special care, or, as will be the case in most instances, to take them to the premises equipped for the purpose. Here, the children will meet others of their own age and will soon learn to adjust themselves socially to each other. They will have outdoor playgrounds to use in fine weather and indoor facilities at other times. All of their dietary and hygienic needs will be met, and there will be beds for them if they become tired. In general, these pediatric centers will resemble present-day kindergartens, but will be much more comprehensive in their attention. Like all other services, they will operate around the clock, so that besides relieving parents during their shifts, they can also act in the capacity of baby sitters' when said parents wish to get out by themselves for entertainment.

For older children, more ad-

vanced facilities will be available. Boys and girls will be encouraged and will be given every opportunity to indulge in organized sports and athletics. Where necessary, supervisors will be provided to give assistance, but as they grow older they will assume more and more self reliance and group responsibility. The objective will be to direct their exuberant energies into such constructive channels as appeal to their respective inclinations and aptitudes, for experience has shown that when latent abilities are allowed to develop without restriction, there are virtually no destructive tendencies displayed.

Such measures of assistance will not supplant but rather complement the attention given by parents to their children. With parents realizing that they will not be left to their own inadequate devices in raising their families, but will have a large share of the burden assumed by society, there will unlikely be the present sorry spectacle of rampant delinquency arising out of constant economic frustrations and parental ignorance of juvenile psychology. So in family problems, as well as in the actual housing of citizens, the Technate will assume its full social responsibility.

Getting back to Mr. and Mrs. X, suppose they live not in an apartment block but in an individual dwelling unit. Who will look after the plumbing, interior and exterior decorating, lawn cutting, etc., if these people do not do it themselves ?

Such functions will be performed by personnel of a special domestic maintenance sequence using all available technological equipment at their disposal. They will cut all lawns with power mowers which will be used not only on individual lawns but on boulevards as well. Employing a tractor-type mower as is now often used on large golf links, one operator could mow many blocks of boulevard in one shift. By replacing the mower with a rotary snow plow attachment, the same tractor could clear sidewalks of snow at a very fast rate during the winter months.

Housecleaning on a major scale will no longer offer its Spring and Fall challenge to harrassed housewives. For one thing, precipitron dust collectors will automatically remove about 98% of the dust from the air, while the ventilating

system would cleanse the air before it entered the house at all. With the biggest part of the cleaning job already done, the maintenance crew would move in to put on the finishing touches and also to make any decoration alterations desired by the residents. This service would not likely be extended to the individual dwellings as frequently as to the suites of any apartment block, but it would be available whenever required or desired.

By refuting the fallacious 'ownership' concept and substituting it with a functional technological control, we can have a superior carefree home life such as we have just outlined. The standard of living attained and maintained in this manner would be 18 times higher than the present average, and this would be accomplished with only 16 hours a week—four hours a day and four days a week with three days off. There would be 78 continuous days vacation each year during the 20-year functional period, with complete retirement and continued full purchasing power at 45.

Using Energy Certificates as the medium, the Technate administration would be the sole distributor of purchasing power, thus relieving all citizens of the necessity of 'paying' others for services rendered. In fact, no one **could** pay anyone else for anything in Energy Certificates, for they would be identifiable to and usable by only that person to whom they were issued. All persons would receive equal purchasing power—not in payment for their services, but because they happen to be fortunate enough to be living on the North American Continent.

All services within the Technate will be performed by the personnel of Functional Sequences using maximum technology. These 90 to 100 Functional Sequences will include such services as housing, education, medicine, transportation and communication, and as well will produce or otherwise procure all raw materials and fabricate them into use forms. The personnel of each Sequence will receive their direction from the heads of their respective Sequences (who have attained their status purely on the basis of demonstrated superior ability), and will be responsible to other citizens only to the extent of rendering the most efficient service. Such a setup will frequently re-

sult in neighbors in different Sequences performing certain services for each other without being directly responsible to each other for their performance. For example, we may find our Mrs. X waiting table on the maintenance crew who cleaned up her home.

With all domestic tasks being performed by personnel who are fulfilling their service contract in a function for which they are adequately equipped and trained, no one will be straddled with the present necessity of a two-shift day. This will automatically preclude the erroneous assumption that all women are natural-born housekeepers, and that deviations from this pattern are the results of laziness rather than a natural disinclination for such work. It is no more accurate to assume that housekeeping comes naturally to all women than it is to assume that all men are inherently endowed with the talents of a highly proficient pianist.

The Price System continues to shirk the responsibilities of our highly integrated society in failing to meet the housing and living needs of all citizens, but the growing rash of 'welfare societies' being organized by different segments of the population to meet a limited number of human contingencies—with limited success—indicates the intensifying trend toward further social integration and interdependence. This is being brought about by the increased use of the very technology which is rendering Price System controls obsolete and inoperable through the production of abundance.

Fortunately, Technocracy has recognized this state of affairs and has drawn up a blueprint of social operation to meet the requirements of an abundance economy when the controls have failed—finally and completely.

This design for living awaits adoption by the citizens of North America. **—Rupert N. Urquhart**

★ NEW YORK.—A federal grand jury indicted two associations representing diamond dealers throughout the United States on charges of violating the Sherman anti-trust laws.

Diamond Dealers Club Inc., and Diamond Center, Inc., both of New York City, were indicted on charges of conspiracy to boycott the German diamond industry and 'unreasonably restraining' this country's imports and exports of the precious stones. *—British United Press*

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the member to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska, Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Essentially Technocracy is a soundly scientific effort to restate economics on a purely physical basis.

—H. G. Wells

TECHNOCRACY DIGEST

NOV. '52

Time for a Change at the Top

Two Kinds of Americans

World Oil Cartel

U.S. Farm Technology

Real Patriotism

No Politicians Need Apply

Crime Menace Grows

Machinery, Tool of Production

No. 146

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TECHNOCRACY INC.

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

NOVEMBER, 1952 **No. 146**

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The Quarterly Survey

'Land of the Free'

Although its professed aim is to exclude Communist spies and propagandists, the McCarran Act, declares a group of eminent American scientists in a recent **Bulletin of the Atomic Scientists**, is isolating U.S. science from vital European ideas and knowledge. It is also, they maintain, antagonizing Europe's intellectuals and giving propaganda ammunition to Europe's Communists.

Dr. Edward A. Shils, professor of social sciences at the University of Chicago and consultant to the Air Force's ultra-secret Rand Corporation, leads off with a long analysis of the McCarran situation: 'A very large number of distinguished European scientists, almost all of them anti-Communist and deeply devoted to the freedom in which scientific truth is sought and discovered, have been frustrated in their efforts to come to the United States to share their knowledge with their American colleagues. (Sometimes) their applications for visas have been . . . finally granted, but only after delays so long that the scientific meetings to which they were invited had taken place, or the teaching appointments for which they had been engaged had lapsed through their failure to arrive in time to fulfill them.'

Says Nobel Prizewinner Arthur H. Compton, Chancellor of Washington University: 'One of the greatest assets of the United States in the century past has been the freedom of our scientists . . . to invite others to bring their ideas personally to us . . . In a period when our welfare and

'Home Of The Brave'

safety depend on maintaining . . . leadership, it is of double importance that this freedom in the exchange of ideas be maintained.'

Foreign scientists, all friendly to the U.S., add their protests, and say that the McCarran Act has already damaged U.S. prestige. Says Physicist M. Louis Leprince Ringuet of France: 'I have even had occasion to see the expression "Iron Curtain of the West" applied quite widely to the U.S.'

Robot Factory

When Technocracy first gave world-wide publicity 20 years ago to the possibility of push-button plants, many people scoffed. But recently, when the Massachusetts Institute of Technology explained the operations of the first completely automatized milling machine, the idea no longer seemed quite so farfetched.

Ranged beside the big milling machine, which looked like any other, were three formidable-looking banks of electronic devices, each of which decoded the 'messages' punched out on a tape similar to teletype. When M.I.T.'s Associate Professor William Pease fed the tape into a transmitter, the huge machine swung into action, cutting all the curves and corners necessary to transform a square piece of metal into an eccentric cam. Only 10 feet of tape was enough to keep the big machine busy for an hour — and turning out the parts three to four times as fast as they could be done under human guidance.

M.I.T. was able to build its robot machine only because the U.S. Air Force paid the $400,000 cost in the hope of finding production shortcuts. But now that the prototype has been built, Engineer Pease estimates that a duplicate, easily convertible to other jobs, could be made for $50,000 to $70,000, about six times the cost of an ordinary milling machine.

Summing up his own views on the possibility of automatic plants in the August **Scientific American**, Pease says: 'With (such) machines in control, we can conceive of factories which will process, assemble and finish any article of manufacture.'

'On Being Human'

May we recommend to our readers a slim volume which the American Library Journal says 'could well, and certainly should, become the most influential book of this century.' It is called 'On

Being Human' and is written by Dr. Ashley Montagu of the department of anthropology at Rutgers University (published by H. Schuman, New York).

In this book are brought together for the first time the leading scientific data in support of the principle that co-operation, not conflict, is the natural law of life. Dr. Montagu summons evidence from the most up-to-date findings in biology, psychology and the social sciences. Further, he offers proof that all living things are so constituted as to demand satisfactions in terms of co-operation; that the conception of 'natural selection' has long been misinterpreted—that it is not to be understood in terms of competition, but in terms of co-operation. As biologist P. R. Burkholder recently stated, 'The most important basis for selection is the ability of associated components to work harmoniously in the organism and among organisms.'

Anthropologist Montagu says: 'Man is born for co-operation, not for competition or conflict. This is a basic discovery of modern science. It confirms a discovery made some two thousand years ago by one Jesus of Nazareth.'

The co-operative society is the one to which Technocracy has dedicated itself. Not only do biology and Christianity support the adoption of a co-operative society, but the advance of technology has made it imperative.

Dr. Montagu's answer to his own question 'how is this problem to be solved?' is 'through social engineering.' Technocracy—the science of social engineering—points the way to survival and the abundant life for the citizens of this Continent through co-operation instead of competition.

—The Editor

★ ATLANTIC CITY, N.J.—The nation's bankers were told here that the free and easy prosperity of the last few years will not last forever.

Speaker after speaker addressing the 78th annual meeting of the American Bankers Association warned that the possibility of a business recession must be taken into account.

A lull in business activity can be expected after the current defense boom has lost its steam, they said. —*Associated Press*

★ EAST DEERFIELD, Mass.—The automaton has made a new invasion of agriculture. A $500,000 grain mill designed to handle 150 tons of grain in eight hours is being operated here entirely by push buttons. —*Associated Press*

Time for a Change at the Top

Scientists and technologists think in terms of human welfare and comfort, not in terms of blood-letting and torture; and, by their record and their works, they have demonstrated that they are the most fit to lead society into the future.

ON many occasions, the wide chasm between the advancement of science and technology on the one side and the archaism of the 'social arts' on the other side has been discussed, depicted, and decried. The great discoveries and advancements resulting from the application of science to human use is always an effective subject with which to amaze the public; and the backwardness of politics, economics, philosophy, and morals is always a suitable subject for lamentation.

It is always nice to have something to 'point with pride' to and something to 'view with alarm,' provided the two remain safely outside of the scope of our immediate endeavors. For instance, the Egyptians have been able to point with pride to the pyramids for tens of centuries and they have been able to view with alarm the encroaching sands of the desert for nearly the same length of time; but nothing had to be done about either—immediately.

If we, likewise, could point with pride to the achievements of science (a science that had leveled off and ceased to advance) and view with alarm the corruptness of politics (which, alas, must always be corrupt), we could make a ceremony of it, say once a year, and be complacent about them the rest of the time. But the 'horrible' facts are to the contrary. We can't merely point with pride and view with alarm; we are compelled to take action and to make decisions of fundamental significance about many things, and it must be done immediately! It is a most 'disturbing' situation, indeed.

The 'experts' on the subject of science versus the social arts often speak as though there is a gap that must be 'closed'—that, somehow, the social arts must be cajoled into 'catching up' with science. Such spokesmen are suffering from a wish-fulfillment escapism; they still hope that it is merely a

matter of waiting for things to come into balance—that there is nothing immediately urgent for **them** to do, and that everything will be fine as soon as certain undefined adjustments are made. Many prominent scientists and technologists feel impelled to speak along the same lines, thereby, we suspect, to reassure themselves that they, themselves, are in the clear but that the 'other outfit' has some fast work ahead. However, the scientists and technologists are not in the clear; for, it is they, not the politicians, economists, and moralists, who must 'get the lead out of their pants.'

Politicians, economists, moralists, and social do-gooders have always been the same as they are today. They do not have a theory of progress. They do not seek change. They can only sit where they are and interfere with progress. It will be a long wait before any social advancement or 'catching up' will come from these; and it is naive of one to anticipate that it shall. They will not change. They can only be supplanted by something very much different.

The scientist, the technologist, and the engineer are in the vanguard of social achievement and social progress. They are the only ones who have a theory of progress and of social advancement. They are the ones who must recognize their true role in society and accept the awesome responsibility that they have inherited. They are not merely the guides, the teachers, and the advisers of the 'leaders.' They **are** the leaders!

The scientists of the 15th, 16th, 17th, and 18th Centuries were the great 'subversives' of their day. They upset the fixed teachings and preachings of the theologians; and this made them ripe subjects for the Inquisitions. Their findings upset the theories of class distinctions and the doctrine of the Divine Right of Kings; hence, the politicians were after their scalps. A few scientists and technologists of that day (the same as today) received recognition and subsidy when they showed that they could produce superior weapons for the armies of the political leaders to use in the slaughter of the impressed subjects of rival political leaders. Then (the same as today), the technologists were despised and spurned by the professional military men who feared that they would revolutionize the

'established practices' of warfare. A r e l u c t a n t recognition of an occasional scientist by the bourgeoisie of business, likewise, was sometimes granted. But, on the whole, businessmen, then as now, were suspicious of new ideas and new things, b e i n g conservative and anti-progressive in their views. So the devout scientist died from slow starvation more often than he was supplied with a decent living. History fails to record how many scientists and b u d d i n g scientists just disappeared, or how many were forced into conservative and more socially-acceptable pursuits by one means or another.

A few early scientists m a d e some great discoveries which gave zest and direction to the very few individuals in the population who had the curiosity, the d a r i n g, and the integrity to take up the challenge of science. T h e y discovered that the universe w a s orderly and that events took place in a regular and predictable manner; that t h e r e were no such things as miracles or spontaneous transformations l i k e h a d long been taught. They discovered that the physical lives of people could be improved by s t u d y i n g and modifying their environment and designing new tools for their use. They discovered that all phenomena w e r e subject to observation, study, and classification. But, most significant of all, they developed the concept of human improvement through social change.

The scientists were the object of all the fury that the intrenched authorities could hurl at them. They were branded as 'materialistic,' as 'un-Christian,' as 'atheistic,' and as 'd i s c i p l e s of the devil.' They often were regarded as 'evil men,' engaged in the pursuit of knowledge so p r o f o u n d that it 'had better be left unknown.' E v e n mechanics were v i e w e d with suspicion—as the people most likely to get radical ideas. And more than once, even in recent times, there have been wholesale slaughterings of mechanics by reactionary p o l i t i c a l leaders; for example, by Kolchak in Russia during the Revolution. This same policy was advocated by the Duke of Alba in S p a i n during the C i v i l War of 1936-1939.

All of the big industries of today depend f o r their existence upon the knowledge, work, and vigilance of technologists, engineers and technicians. Yet, h o w

many industrial corporations have bona fide scientists or engineers on their boards of directors? How many of the scientifically-trained men receive remuneration comparable to that of the financial executive? The Price System is very niggardly about rewarding those who have contributed most to human progress and welfare. The scientists and engineers are the step-children of the Price System — the ones who receive the dirty jobs, but not the favors.

How long has it been since a prominent scientist served in the federal Cabinet of the U. S. or Canada? Discounting Herbert C. Hoover, whose chief abilities were those of a financial promoter and not of an engineer, there have been none. Scientists are not recognized by official appointments to places of major responsibility in government. They are assigned subsidiary positions under political bureaucrats or businessmen, where they are held under restraint and viewed with suspicion. A baseball player, a television clown, or a motion picture actress receives far more public recognition and social rewards than the top-notch scientists and technologists.

The big shots of politics, business, finance, and moralism are not leaders in a dynamic sense; they are merely presiding chairmen over a static condition known as the status quo. They can only hold on where they are; they are not prepared or equipped to go anywhere. North America cannot look to these people to lead it out of the woods of confusion in which it has lost its social direction. Under dynamic social conditions, these men become the agents of confusion. If there were a positive direction to the course we are following, they know that they would be only little men, without the ability or the knowledge to be leaders. So they sit like 'dogs in a manger,' unable to preside over progress themselves and refusing to let anyone else handle the job. The recent political campaign in the United States brought these little men out into the open, yapping like little pekinese dogs, saying nothing that made sense, indicating no comprehension of the present social situation, and having no positive concepts for the future. Over radio and television, the public had a chance to see them for what they are, and they were a sorry sight.

Incidentally, radio and television are the products of applied science. No businessman or politician had anything constructive to do with their production; although they have been very effective in 'messing them up.' For example, instead of permitting only a few television channels, with wide bands of radio frequencies and large clear pictures, the businessmen insist on the maximum number of channels (although it means inferior pictures) in order to sell the greatest amount of commercial advertising. The type and quality of programs that businessmen, politicians, and moralists sponsor (and censor) are a convincing demonstration that none of them are capable of providing social leadership for this Continent. As technological achievements, the radio and television are wonderful accomplishments—as much of a credit to science as the programs they carry are a discredit to the people who monopolize their use.

In the field of health, science and technology have made very creditable progress. Yet, these leaders in the field of health are stymied for lack of facilities, materials, and assistance, partly because these depend for funds upon a depleted residue from charity shake-down rackets, and partly because the medical technicians (doctors, etc.) are more interested in establishing and maintaining a business racket than they are in providing health service to the public. Infected with the Price System virus, the 'successful' medical doctor is more interested in acquiring a bourgeois residence with expensive oil paintings on the walls and in equipping his female with fur coats and jewels than he is in advancing the science of health. People who are willing to sell out for so cheap a price are not fit candidates for social leadership.

The 'Sons of Martha,' having always been subservient to the 'Sons (and Daughters) of Mary', still tend to look to the kept socially elite for permission and direction. The error of this traditional debasement of scientists is becoming ever more obvious, as the abilities and achievements of the people who **know how** are being perverted by the people who presume much but know little. The politicians, businessmen, and moralists, seeing their prestige waning in the face of a

technology which they do not comprehend, are everywhere retreating into corners of darkness, screaming epithets of 'atheistic materialists' at the scientists and technologists, for the latter are revealing the ignorance and weakness of the former. Yet, where in the record of history is there an 'atheistic materialist' who is guilty of any major heinous crime against society such as are routine with the self-avowed disciples of spiritual morality? Politicians, businessmen, and moralists have been guilty of innumerable wars, social depressions, enslavements, Inquisitions, and internecine strife; and, in these they have utilized some of the knowledge, skills, and achievements of scientists and technologists, although the latter have never been permitted a voice in making the major decisions.

The chief 'medicine men' of the social arts have a long, black record to condemn them. Their claim to social leadership is the claim of blood-spattered social bullies—of murderers, arsonists, rapists, and terrorists. It is not a valid claim. The record of science and technology is clean; for, no social crimes can be laid to scientists and technologists (unless it be the crime of being subservient to the cruel and arrogant human beasts of prey who have commanded their services). Scientists and technologists think in terms of human welfare and comfort, not in terms of blood-letting and torture; and, by their record and their works, they have demonstrated that they are the most fit to lead society into the future.

Whether handicapped by a collective enterprise, laissez-faire enterprise, or anarchist political regime, the scientists are at present no better than lackies of the defenders of the status quo. It is time that they declared their independence from such 'encirclement' and aggressively assumed their proper role in the social order—at the head of the Social Control, where the important social decisions are made. They alone can guide civilization to a higher, more secure, and more beneficial order of operations. Let them depose the incompetents who now occupy the seats of leadership, but who can offer the people no more than 'blood and sweat and tears.' That kind of 'leadership' has never been any good to man and, now, it is long

over-due for extinction. The sooner this is accomplished, the greater will be the advantages to mankind.

Technocracy has been disseminating for more than twenty years the specifications for a technological social governance of this Continent, in which the politician, the businessman, and the moralist would not be able to interfere with the livelihood, freedom, and security of the people of North America. Technocracy is the vehicle by which scientists shall come into control of their own destiny and, at the same time, the destiny of all the people. Then we can confidently visualize the end to wars, famines, disease, human toil, insecurity, and the tears of frustrated and sorrowful victims of Price System inhumanities.

Scientists and technologists! You have defaulted your responsibility long enough. How about getting that 'lead out of your pants' and repudiating the nincompoops who have been 'using' you for so long and start working on the job that you know must be done? You can't begin any sooner (although it is obvious that you should have done so), but you **can** wait until it is too late. Here and now is the place and time for you 'atheistic materialists' to show the moralistic make-believers how a social mechanism should be run.

How to go about it? First, let us mention a few ways in which you would not go about it if you expect results. You would **not** use the political method of forming a political party and running candidates for political office; that would only make you imitation politicians. You would **not** seek to be 'understood' by the public through appeals to its intelligence. You would **not** attempt to organize a coup d'etat and 'take over' by force. You would **not** seek to form a powerful economic pressure group for the purpose of bribing and blackmailing yourselves into the seats of power. There is another means that is unassailable and extremely effective. It is the technological approach: Join the 'Technological Army of the New America' and play North America to win—with Technocracy. **—Wilton Ivie, CHQ**

Two Kinds of Americans

The sides are now clearly drawn, and it is obvious for all to see who in America are 'good' and who are 'bad.' On the 'bad' side are the 'communists.' On the 'good' side are the Roman Catholics. There are only the two categories.

BY training and inclination, Americans generally are capable of thinking in terms of only two categories. For example, they can think of things as being black or white, but it is impossible for most Americans to conceive of a third or 'gray' classification. In politics, only a few citizens are able to think in terms of three parties; most are able to conceive only of Democrats and Republicans. That is probably the main reason why a third party has never been successful in America. This two-kind of thinking is nearly always partisan: there is 'our side' which is 'good' and the 'other side' which is 'bad.' It is useless to introduce a third 'side' into the discussion; the average American mentality does not have the capacity to think in threes, only in twos.

During the war, there were as usual two sides. 'Our side' and the Axis side. For some strange reason, the 'other side' was never officially referred to as the 'fascist side.' Perhaps there were enough influential Americans whose sympathies were, sub rosa, with the fascist cause, and these prevented the issues of World War II from ever being clearly stated on this Continent. However, during the war, so far as the American and Canadian public were concerned, Russia was on Our Side, so Russia was 'good.' The propaganda agencies of the United States even solicited a statement from Marshall Stalin in support of the American War Bond drives and Stalin graciously obliged. Every day, one could hear the expression, 'Good old Joe!'

Then, even before the war was over in Europe, a re-alignment of sides began to take shape. Our Side is still the 'good' side and the Other Side is still the 'bad' side; but different people are on the two sides. The fascists now are on Our Side, therefore they are 'good.' Joe Stalin and the Russian

people are on the Other Side, hence they are 'bad.' It has been interesting to watch the re-alignment of sides take place in America—under the auspices of the agencies of propaganda, investigation, and persecution.

The sides now are clearly drawn, and it is obvious for all to see who in America are 'good' and who are 'bad.' There are only the two categories. (In America, there could not be three.) On the 'bad' side are the 'communists.' On the 'good' side are the Roman Catholics. By observing the trends in propaganda, investigation, and persecution, it is obvious that in America if you are not a Roman Catholic you are a 'communist.'

The 'good' people in America are all militantly supporting the Vatican's war on communism and the U.S.S.R. Therefore, they are the agents of a foreign power; and, in that capacity, they are trying to impose upon the 'communist' majority in America the political policies of that foreign power. As agents of the Vatican State, it is only fitting and proper that all the 'good' people be required to register as such, so that the 'bad' (non-Catholic, hence 'communistic') majority of Americans will know them for what they are. The 'good' Americans comprise only 15 per cent of the population, while the 'bad' Americans comprise about 85 per cent. However, the 'good' people never have believed in democracy, except that they sometimes use it as a mouth-word in the areas where they are a minority.

Does it not seem strange that the chief propagandists, 'witnesses,' investigators, and persecutors in America happen to be Roman Catholics, while almost all of the people who are being smeared, investigated, and persecuted happen to be non-Catholics?

—Techno Critic

★ VANCOUVER.—The subject of milady's nylon stockings has taken the attention of the British Columbia Young Progressive Conservative Association.

In a resolution, the Association asked the federal government to investigate the hosiery and textile industries with respect to the manufacture of women's nylon stockings.

The resolution said that when nylon hosiery was first introduced on the market, it wore for a considerable period of time. Nylon hosiery now develops runs 'within a matter of days,' the resolution added.

The resolution suggested that hosiery manufacturers were deliberately making their product less durable to increase sales. — *Canadian Press*

Machinery, Tool of Production

Inventions and the products of machines have made themselves part and parcel of our lives. Without the help of machinery there could not be that vast outpouring of goods upon which our high standard of living is based.

THE four material factors most important in the economic well-being of a nation are invention, population, natural resources and economic organization. This article is about the machines we invent in order to mould natural resources into usable products for our people, and to distribute the commodities.

With a world population so large that economists tell us we must strain our resources to feed all the people, we are under increasing compulsion to expand productivity. We can do so only by using machinery.

For a dramatic contrast between the efficiency of human labor and that performed by machines directed by men, look at the Great Pyramid and Boulder Dam. The pyramid contains 2,300,000 blocks of stone, each weighing 2½ tons. Dr. W. M. White, a consulting engineer of Milwaukee, has figured out that it took 100,000 men over a period of 30 years to build it. Boulder Dam has 3½ million cubic yards of concrete, requiring the handling of 10 million cubic yards of material. A power line 220 miles long brought electricity which was applied through machines by 5,000 men. The pyramid was built by slaves under the taskmasters' lash in 30 years: the dam was built by machines under the direction of skilled workmen in five years.

What has brought about the change from a slave society to one in which every worker may be the master of manufactured power equal to that of hundreds of men? Imagination; the power to visualize what would result if this and that were put together; progressive skill in applying the forces of the six basic principles of machines; the lever, the wheel, the pulley, the wedge, the screw and the inclined plane. The wooden scoop of untutored races de-

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veloped through the ordinary spade to one with a pneumatic attachment, and finally to a huge shovel with steel teeth that can gobble up a cartload of earth at one mouthful.

The Industrial Revolution, which was simply the substitution of gigantic non-human forces for our puny human physical powers, took us out of the backward economy of the spade, the hand loom, and the human back as a burden bearer. It altered the character of life from the old indignity of harsh toil to mastery over resources.

Economically, the effect was to take industry out of small family establishments and concentrate it in factories. Cities in Britain were booming industrial centres while the scattered farmers of Canada still used tools the Egyptians had invented, and still carried grain long miles on their shoulders to have it ground at a water mill.

Machines met strong opposition, but it is nothing new to find progress obstructed. The art of selling new ideas is often as dangerous as it is difficult.

Ancient beliefs and frivolous ideas were used to resist mechanical advancement. English farmers drove out with violence the man who suggested using drilling machines to plant grain. Vienna police forbade the use of a carriage driven by a benzene motor because it made too much noise. Railways were opposed on the grounds that they would prevent cows from grazing and hens from laying. In the United States, small-town bankers refused for many years to lend money on tractors because they were a menace to farmers. And in that same country in the 1840's the bathtub was denounced as an innovation designed to corrupt the democratic simplicity of the Republic.

In spite of all these and the propaganda effect of Samuel Butler's utopia in which no machines were allowed, not even clocks to keep time, machinery has come. We plant and cultivate and harvest by machine; we have survived the noise of the horseless carriages, and our streets are cluttered with them; there are single counties on this Continent with more cows than there were in all of pre-railway England; and bathtubs are made in thousands by machines, to the great increase of cleanliness and improvement of health.

Early complaints about the fac-

tory system were undoubtedly justified. The coal, iron and textile industries in England were swept too suddenly into mechanization. Factory buildings were improvised, and people crowded in from rural hamlets to build bleak and grimy towns.

In explanation, it might be said that no one had the foresight to know what was coming; indeed, we are in the same fix today in our ignorance of what is meant to the world by atomic energy, international rivalries and the uses that will be made of inventions flooding the patent offices of the nations.

Inventions and the products of machines have made themselves part and parcel of our lives. Without the help of machinery there could not be that vast outpouring of goods upon which our high standard of living is based. The very hardest toil by everyone in the world, without machines, would not provide anything but a scant life for anyone. It is the margin of labor-saving provided by the machine that makes possible the extras, the new necessities of life, which add brightness to living.

W. F. Ogburn wrote a book called **You and Machines** in which he showed the machine advantage in this way: 'Many workmen today live in steam-heated houses with bathtubs, and hot and cold running water, and indoor toilets. More than a few of them have automobiles. In Queen Marie Antoinette's apartments in the palace of Versailles in France, the stove used to heat the big rooms was very inferior to our modern furnaces . . . Her bowl and pitcher were not as convenient as the modern wash basin with its drain pipe and running water. Very probably the girl behind the counter at Woolworth's has more silk stockings than had this queen. She never had a radio, nor a telephone. She never went to a moving picture show. Her food was cooked over an open hearth in the cellar of the palace, not on an electric or gas range.'

Not only on the level of physical well-being are the workers of today better off than the queens or kings of not so long ago, but on the higher levels of individual culture. Magazines and books broaden their horizons, and art treasures belong to the people, not in guarded castles. Our life-span has grown longer. We have more

leisure, though we have not yet learned fully how to use it in satisfying self-expression.

There is in Canada a great educational equipment, universities, schools, libraries, night schools, study groups and farm forums. There is, literally, no excuse for boredom. Society needs socially literate persons who will turn their hands to advancement of community life, and in this type of participation everyone can find as great satisfaction as the most eminent statesman does in working for his country.

Now that the handicraftsman of past centuries has been split up into parts, how can he find happiness in his work? The physical energy he used to contribute is provided by manufactured power; his individual operative skill has been replaced by the precision of mechanism; and his craft knowledge has developed into the technician's specialized knowledge of the reactions between the factors with which he works.

We see many a workman who is visibly proud of operating a powerful machine with full responsibility for its control. That is not a depressing, monotonous job, but one that expands a man's ego and establishes self-confidence.

The farmer, like the city factory worker, must know far more than his ancestors. His work with tractors, harvesters, milkers and the other machines that ease work on the modern farm is not soul-destroying or deadening. It gives him new horizons, and far from making him a robot develops him into a king.

Some persons, of course, are happy in ruts. As the psychologists say, they 'fixate' at a certain level. They become content to throw a switch, tighten a bolt, press a button or pull a lever. They survive in the Machine Age with far fewer skills than the most primitive savage in his jungle.

These are the robots, because they are content to be. There are not among them any George Stephensons, climbing from mining drudgery to change the world with their ideas; nor Isaac Newtons, glass grinders and makers of spectacles, seeing through space to a new idea of the universe; nor George Westinghouses, bucking opposition from the highest quarters for the sake of a life-saving idea. But their backwardness is not the fault of the machine. There have been such people in all ages.

No matter how good our machine may be, it is useless by itself. It needs power to give life to its moving parts. The really important thing about the Industrial Revolution was the substitution of other powers for physical human effort as the working energy of production.

We of today have the same biological limitations as ancient people. We have little physical strength. It has been calculated that we cannot for any sustained period put forth more than 1/10th horsepower. With that kind of power the production of commodities would be on a small scale and very slow.

To increase production and take the load off our shoulders we were inventive enough to use wind and running water to turn mills, and then we went on to other devices. Through the work of many ingenious men there are today five kinds of power-developing engines which provide 95% of the world's energy: the reciprocating steam engine, the steam turbine, the water turbine, the gasoline engine and the diesel engine.

Chief among these for industrial purposes is electricity developed by water power. The first hydroelectric plant in Canada was installed in the 1880's. The developed hydraulic turbine horsepower in Canada today is 12½ million. This, on the commonly accepted basis of one horsepower being the equivalent of the work of ten men, furnishes energy equal to that of more than 125,000,000 workers, yet the whole labor force in Canada today is only about 5,200,000.

History and economic investigation show that high productivity is the key to a high standard of living. Low productivity can mean only fewer and fewer goods at higher and higher costs for fewer and fewer people. We have Aladdin's lamp in our hands, but we have to rub it.

The objective should be to get as much work out of every machine as we possibly can.

While our universities and schools are well supplied with teachers of history, not one has a professorship for the study of the future. It would be a good thing, suggests W. F. Ogburn in **Machines and Tomorrow's World**, if we had a group of thinkers who would devote all their time to a study of trends.

If there is difficulty in building bridges to a bright future it is not because of lack of materials: natural resources, inventiveness, skills and so on. These are all at our finger tips. It is because of the lack of something that would assemble all these and make them stick together.

When an ancient Greek dramatist had entangled his plot beyond human solution, an actor dressed as a god was lowered over the stage by a crane. He, the 'god in the machine,' got the playwright out of his mixup by solving the problem along supernatural lines. No 'god from the machine' can be counted upon to get human beings out of any tangle they create. It would be good business to apply common sense and honest endeavor to prevent the need arising.

★ THE U.S. PRESIDENTIAL ELECTION is one of the more obvious punctuation marks in history. It becomes doubly so when a new regime in the White House synchronizes with a shift in world trends. This happened in 1932. It begins to look as though 1952 also is going to be not so much a comma as a period.

For the portents are visible which tell us that the great sellers' market of the post-war period is just about over. Rearmament has passed its peak and the U.S. national income is expected to shrink by about 10% in 1953. Meanwhile, production has already dropped substantially in Britain and France. Thirteen years of full employment are being forgotten in the rapidly mounting unemployment. A shrunk world market—so much of it shut off from the West by the Iron Curtain and by lesser political animosities—intensifies competition at the very time when the dreaded competitors, Germany and Japan, re-emerge with all their old indus rial vigor unabated.

The most disturbing factor, however, lies in the fact that the traditional Republican Party prescriptions are the worst possible medicine for this malady. We don't know where Eisenhower really stands on any economic question but we know where he stands in relation to Senator Taft—and we know where Senator Taft stands about such matters. Cuts in foreign aid, cuts in federal government spending, and higher tariffs are all in the Taft recipe. Jointly and severally, these are precisely the policies best calculated to aggravate rather than cure an incipient recession throughout the Western world.

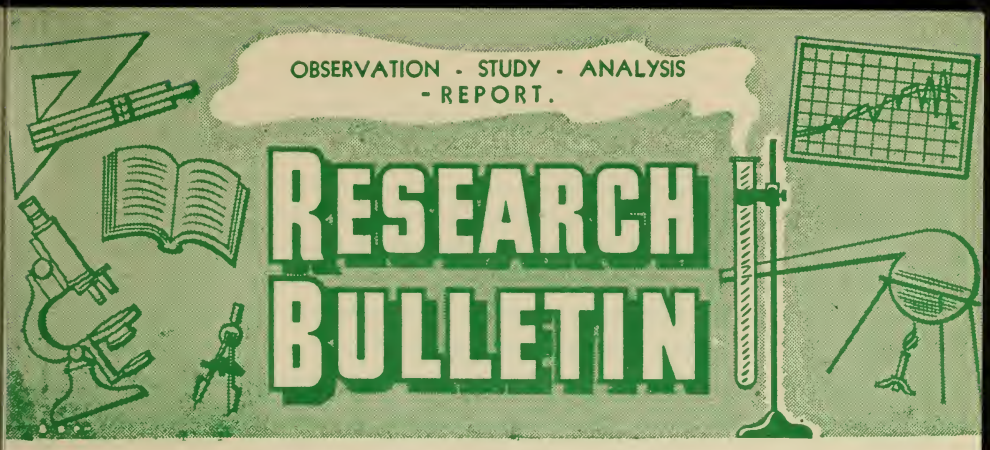
The Roosevelt-Truman epoch is certainly dead. The Eisenhower era opens with clouds on the horizon definitely larger than a man's hand.

—*New Westminster British Columbian*

★ CHICAGO.—Crime has increased nearly 25% in the U.S. in the last five years —almost three times the rate of population growth.

Something has to be done about it, warned J. Edgar Hoover, director of the Federal Bureau of Investigation recently in supplying figures and comment for a two-day crime prevention conference starting here.

Hoover said that in any study to determine the causes of the crime increase the economic, social and political factors must be considered. —*Chicago Tribune*



NOVEMBER, 1952 *Compiled by Editorial Staff* No. 91

U.S. Farm Technology

THROUGHOUT the nation the need for cheap agricultural labor is shrinking as productivity per acre and per man-hour rises. This change is brought about by the impact of science and technology which has brought developments such as these:

The mechanical cotton picker, now greatly aided by chemicals that remove the leaves from the cotton plant just before the cotton is picked;

Cleaner ginning methods that correct the greater trashiness of machine-picked cotton;

Chemical weed killers such as 2, 4-D, and newer ones that are even more effective;

New types of insecticide sprayers, which cover an acre with only five gallons instead of 50 as before;

Crop dusting by airplane, which also employs the new-type spraying devices, and can take care of 30 acres with only five gallons instead of 50 as before;

Sowing seeds which are coated or pelleted, and can contain in one

making one operation out of seeding and fertilizing;

New soil conditioners like Krilium, still in the laboratory but apparently amazingly effective;

Improved quality of both livestock and crops, extending still further the achievements of the recent past which have, for instance, increased the yield of corn from 26 bushels per acre 40 years ago to more than 35 today, while the number of man-hours of work per hundred bushels has been reduced from 135 to 67;

Improved techniques in artificial insemination, which make it possible for a high-grade bull to father 2,000 calves per year, instead of 40;

The use of growth stimulants or plant hormones to speed up or retard growth and thus avoid losses because of inclement weather at one end or the other of the growth cycle;

Destruction of weeds by use of flame-throwers;

Increased use of mechanical aids on the farm, such as special machines to cultivate and harvest sugar cane and peanuts, and tractors, hay bailers, combines, corn pickers, and milking machines — many of which have more than trebled between 1940 and 1950;

Feeding antibiotics and vitamin B12 to speed up the growth of young chickens, turkeys and hogs—in some cases as much as 20%;

Use of a chemical spray to thin out an apple orchard, often saving 50 or more man-hours per year;

Use of chemicals to destroy potato plants above ground when they are mature and need to be removed, at a great saving over previous techniques employing hand labor or flames;

Experiments now underway with the new chemical, Estradiol Cyclopentylpropionate, which give hopes of causing ewes to lamb twice a year, instead of once, and also to increase the fertility of other farm animals.

This is the nation-wide trend. However, the impact of this technical revolution will be heaviest in the South, the last to be mechanized. Many people do not realize that in recent years the rate of insecticides, fungicides, herbicides, growth hormones and fertilizer, thus pellet—which can be colored to repel insects, rodents and birds—in-

crease of farm machinery has been much greater in the South than for the country as a whole. The percentage of the cotton mechanically harvested rose from one-half of one percent in 1946 to 17% in 1951—more than ten times as many bales were mechanically harvested in 1951 as in 1947. Between 1945 and 1951, according to estimates, the number of combines more than doubled, milking machines quadrupled, and corn pickers increased more than 600%. The increase of cattle numbers by more than 50% between 1930 and 1950 also reduced the number of workers on Southern farms. This is most marked in the black belt of Alabama, where a much smaller labor force is used in cattle farming than was earlier used in cotton farming. In response to the increase of mechanization and livestock farming, the number of tenant farmers in the South decreased more than 280,000 or 20%, between 1940 and 1945; a further decrease of more than 260,000, or 22%, occurred between 1945 and 1950. The number of hired farm workers also decreased, as farm operators and their families with machines and livestock did a larger proportion of the farm work themselves. The number of farm owners showed an increase of more than 8% during the decade.

The families on mechanized and/or livestock farms are doing a better job of farming than they ever did before. They find it profitable to take care of their land through wider use of legumes, contour plowing, and other long-recommended practices. Also, Southern farm families are raising their levels of living relatively more rapidly than the farmers in any other part of the country. Between 1940 and 1945, the level of living of farm operators in the South rose 32% as compared to the national gain of 25%.

It is estimated that a farm operator can get along with at least one less tenant family if he gets a tractor, and that a mechnical cotton picker does the work of about 40 pickers. In view of these estimates, both on the conservative side, and to the increase of livestock farming, it is no surprise that there was a decline of well over a half million farm tenants in the South between 1940 and 1950—a decline of nearly 38% in the decade—and that the decline continues.

Now that chemical weed control for cotton production seems to

be imminent, it is not uncommon to hear plantation owners state they believe the fuller mechanization of cotton will move steadily forward, and that there will be a yet greater decline in the number of hand workers needed. Some plantation owners now point out that it was simply impossible for the old South to provide adequate education, health and other public services for all of its people; that the per capita production was not enough to support the population.

Tobacco remains largely hand produced, but the number of farm families who rely upon its production is relatively small as compared with the number who grow cotton, and tobacco farming operations have generally been more diversified and on more of a family hand-labor pattern than cotton. Even so, the amount of hand labor on tobacco farms is being steadily reduced through the application of chemicals to keep off the worms and the use of thermostat controlled oil burners in curing barns.

In some plantations and smaller farms mechanized ahead of others, the whole South is now spotted with the new in the midst of the old, with the new everywhere on the increase. **—New Republic**

Measuring Electricity

ELECTRICITY is just about the most accurately measured commodity sold today; and because their performance affects almost everybody's pocketbook, the instruments that do the measuring must be built with the precision of the finest watch.

These measuring devices, called watthour meters, are literally gold plated 'scales' balanced on sapphire jewels. They are installed in the basement or on the side of every home, apartment house, store or factory wired for electricity. They measure the consumption of electric power in kilowatt hours—one kilowatt hour is enough electrical energy to burn a 100-watt bulb ten hours.

In 1888 O. B. Shallenberger, at that time the Westinghouse Electric Corporation's chief electrician, invented the forerunner of modern

watthour meters. Quite by accident Shallenberger came upon the induction principle on which the watthour meters are based. He was watching the operation of a new arc lamp when a small spring became detached and fell near the lamp's magnet. Immediately the spring began to rotate. He found that the rotation of the spring, a magnetic material, was caused by the action of the magnet's field.

Using this knowledge, Shallenberger built a meter within a month. Three months later Westinghouse put it on the market and in the next seven years sold 10,000. More than a third of the 45 million meters in use today in this country were made by the Westinghouse Meter Division at Newark, New Jersey. Watthour meters have been designed to give long service with undeviating accuracy, even after thirty or forty years. Recently a meter which had gone unnoticed for 42 years in an old Pittsburgh home was discovered. Although it has not been serviced in four decades, the meter was still in perfect condition—better than 99% accurate.

The watthour meter works like this: current flowing to a home first passes through an electromagnet in the meter, causing a wafer-thin disc to rotate. The speed of the disc's rotation varies exactly in step with the amount of electricity passing through the electromagnet. In this way the number of revolutions an hour reflect the precise amount of energy consumed. In the most common home-type meter made by Westinghouse, a kilowatt hour is registered after 500 revolutions of the disc.

To insure continuously true measurement, the disc rotates on a jewelled bearing consisting of two cup-shaped sapphires surrounding a highly-polished steel ball, scarcely bigger than a pin-head. Sapphires are used because of their extreme hardness and high polish. More than 2,000,000 natural or synthetic sapphires are used by the Meter Division each year in the manufacture of watthour meters, electric instruments and protective relays.

In the common house meter 265 parts are used in seven basic subassemblies. Some 600 labor operations are required in making one meter.

Since most watthour meters are mounted out-of-doors, exposed

to the elements, they are built to operate in any weather. The precisely milled gears of the meter's register, or counter, are gold-plated to protect them against corrosion.

In the Meter Division's development laboratory, sample meters are subjected to the dry heat of the Arizona desert and the penetrating cold of the polar North. They are salt-sprayed, bounced and overloaded to prove their performance.

Although Westinghouse makes more than 136 varieties of metering apparatus, 80% of the total production is the model most commonly used to meter the power consumption of a home or apartment. The other models determine the power bills of factories and other big users of electricity.

Controlling electricity is probably even more important than measuring it, and the two go hand in hand. The sensitive devices that can take the pulse of power and thereby help regulate its work are electrical measuring instruments, made by the Westinghouse Meter Division in more than 64,000 varieties. Voltmeters, ammeters, frequency meters, wattmeters—just to mention a few—each measures one of sixteen different electrical properties at any given instant. A power station serving a community of 10,000 may be equipped with as many as 400 instruments.

The Meter Division is currently making extremely sensitive instruments that help to measure accurately all types and quantities of atomic radiation, as part of the government's atomic research and civilian defense programs. Called the Universal Roentgen Meter, the instrument is the measuring part of radiation detection devices being built by American manufacturers for the armed services and for atomic research laboratories.

With electricity pacing the expanding mechanization of industry, instruments are more and more essential in this field. The control panel and its instruments have become the modern factory 'work bench.'

Instruments are indispensable in aviation. The crew of a modern airliner relies on as many as forty instruments to reveal everything about the plane's condition from engine temperature to whether ice

is forming on the wings. They help guide the pilot in night flying, 'blind' landing and in knowing that he's 'on the beam.'

Like watthour meters and electrical measuring instruments, protective relays combine precision with ruggedness. Recently in St. Louis, a workman accidentally drove a pick into a high tension cable. In a split-second before even the pick was burned, power was removed from the line. This modern miracle was the work of relays at power stations about five miles from the scene.

This device, manufactured by the Meter Division, detects the outbreak of power line trouble, then prevents its spread. When a short circuit or other electrical fault occurs on a line, the relay detects and initiates isolation of the fault in a sixtieth of a second—before expensive equipment can be damaged.

Rightly called 'silent sentinels,' protective relays stand guard over the nation's power facilities — transmission lines, generators, transformers and allied equipment. In the earthquake which shook Seattle, Washington, in 1949, relays isolated the sections of the city's power system directly affected. This permitted the remainder of the system to function normally, and at the same time made it possible for the faults to be cleared and service restored in a few minutes.

—Brotherhood of Locomotive Firemen and Enginemen's Magazine

★ CHICAGO.—A sociologist predicts nine major 'changes and problems' will occur during the next 45 years.

William Fielding Ogburn, professor emeritus of sociology at the University of Chicago, told his students they would see these happenings :

1. No more heavy muscular work for labor, with light labor even giving way to more automatic production in factory, store, home and transportation.
2. More and more inventions, coming faster and faster.
3. Some dispersal of population resulting from developments in transportation, particularly of helicopters and highways, of airplanes and rockets.
4. Many contacts with distant people, some friendly and others not. This will make possible larger sovereign states, bigger powers than the U.S.A. or the U.S.S.R.
5. More big business, fewer entrepreneurs and an industrial bureaucracy.
6. An average income of $6000 per family with the purchasing power of 1952 money.
7. An era of automatism; an age of gadgets.
8. Mechanical power, cheap, abundant and fatigueless for the basis of material wealth and income.
9. Much bombardment by propaganda and persuasion, so inimical to good thinking, but so useful to patriots, ideologists and other pressure groups as well as to advertisers.

—British United Press

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

A MULTIPLE-RAM ASSEMBLY press designed to operate in a fully automatic, automobile engine production line has been introduced by Colonial Broach Co., Detroit. It assembles a maximum of 420 valve guides per hour.

Automatic inspection of press-fit assemblies is provided by a panel of red and green indicator lights. This enables instantaneous observation of the press fit of each part within the desired tolerances, shows whether it is too loose, satisfactory, or too tight.

ONE OF THE HIGH SPOTS OF THE recent National Business Show in New York was a $7000 desk built by Brenner Desk Co. It had just about every push-button gimmick you'd expect to find in a desk—and some that you wouldn't.

Brenner's desk comes in golden oak. It has dozens of panels that can be opened by pressing an ingeniously distributed set of push-buttons. The top of the desk is free for paper work.

Lighting is provided by a battery of built-in fluorescent tubes. Behind one panel there's a mirror and an electric razor for quick shaves. Another compartment contains a hermetic humidor and lighter for cigars. Other panels conceal a telephone, radio, intercom outlet, ice-trays, disc recorder, liquor cabinet and cast steel safe.

FROM STANFORD UNIVERSITY comes word of a new vacuum tube that looks like a fire hydrant, consumes energy at the rate of 100 million watts and puts out as much power (in short bursts) as the entire supply of the city of San Francisco. The monster is a klystron, an ultra-high-frequency oscillator. Stanford plans to use 20 such tubes to speed the electrons in a billion-volt linear accelerator it is building.

The new klystron, with 400,000 volts applied to its cathode, puts out millionth-of-a-second pulses of energy at more than 15 million watts—some 10 times as much as the output of any other tube. The Stanford engineers think that the power potential of a tube of this type is 'practically unlimited.'

TRANSISTORS, TINY ELECTRONIC amplifiers that do the work of a vacuum tube, have gone to work for the first time in America's telephone network. Bell Telephone Laboratories are using them in a trial installation in dial-switching equipment in Englewood, N.J.

COMMERCIAL ICE CAN BE PRODUCED faster and more cheaply by a new

center-core process than by conventional brine-tank methods, according to scientists at the University of Texas. The process forms a center core of ice and adds frozen layers rapidly from coatings of pre-cooled water.

A MOTORIZED SWEEPER FOR FACtories, warehouses, schools, parking lots, and other indoor and outdoor areas, is being introduced by Multi-Clean Products, Inc., St. Paul, Minn. Eight heavy brushes clean a path 36 inches wide. A powerful vacuum cleaner sucks up dust into a large bag mounted on the sweeper.

ELECTRIC GENERATING CAPAcity of the U.S.'s railroad locomotives is now 25% that of the nation's utilities. General Electric reports that more than half of the railroads' locomotive fleet is now diesel-electric. Generating capacity is 10 times as much as it was 10 years ago.

THE SCREW FEED USED IN COAL stokers has been adapted to larger-scale automatic coal conveying up an incline to fill several hoppers. Canton Stoker Corp. of Canton, Ohio, offers this new 'Flo-Tube,' which appears to have possibilities for handling other bulk materials such as grains, pellets, flakers and chips.

TITANIUM MAY BE MINED FROM sand banks if a portable prime separator being tested by Hobart Brothers Co., Troy, Ohio, and H. B. Cannon, mining engineer, works out. The machine is designed to separate most of the sea sand from titanium base mineral.

PORCELAIN ENAMELED STEEL was used on a large scale for the first time in constructing the 14-story steeple of the new Central Park Baptist Church in Birmingham, Ala. The coating, a grey-tinted porcelain with a mat finish to reduce glare, is lightweight, cheap and never needs replacement or repair. Bettinger Enamel Corp. of Waltham, Mass., did the development work.

THAT'S NOT A BOOK YOU SEE ON the secretary's desk. It is a bantam dictating and transcribing machine developed by Thomas A. Edison, Inc., West Orange, N.J. Less than 2½ inches thick and under 12 pounds in weight, you can slip it into your briefcase when you travel.

The VP Edison Voicewriter uses Vinylite recording disks that have a capacity

of 30 minutes of dictation. To play back all or part of a dictation, just turn the knob. The microphone doubles as a speaker for transcribing.

KOPPERS CO. OF PITTSBURGH HAS stated that it will start work within a few months on the first commercial installation of a new type machine that converts steel into solidified billets or slabs in a continuous line. The machine, to be built for Atlas Steels Ltd., at Welland, Ontario, will be a continuous ferrous-metals casting machine to produce tool, stainless and other high grade steels. It is expected to yield up to 15% more finished steel per heat than conventional pouring methods.

Koppers said that with an uninterrupted supply of molten metal, the machine would be capable of casting a slab of indefinite length. In practice, however, automatically - moving acetylene torches will cut the metal into usable lengths as it emerges from the caster. A Koppers spokesman said the machine, particularly in small and medium sized plants, will allow bypassing of the blooming mill and soaking pits with sizeable cost - savings.

A NEW ATOMIC DEVICE WHICH could end U. S. dependence on Canada for a powerful cancer-fighting material now is in operation. It is an atomic 'furnace' capable of producing the greatest intensity and concentration of atomic rays in the world. The machine is called a 'materials testing reactor.' Actually, it is designed to test materials which might be used in the future to construct atomic devices such as those aimed at yielding atom power for industry.

A MAGNETIC LIFTER AND FEEDer hand tool to use with punch presses has been developed by Magnetool Division of Ultifinish Manufacturing Co., Detroit. Metal parts to be fed to the punch presses held tight by the magnets on the end of the new tool. A turn of the wrist releases the work when positioned.

A NEW BUTTER-MAKING PROCESS in which the acidity of cream is regulated by electronic controls has been developed by Minneapolis-Honeywell Regulator Co.

A NEW CIGARETTE-MAKING MAchine has been developed by American Machine & Foundry Co., New York, which is about half the size and weight of current types with a comparable output. This means that a lot more equipment can be squeezed into existing floor space.

AMF says there are other advantages, too. The unit turns out cigarettes about 25% faster than previous models. Because it has fewer parts, it is cheaper and easier to maintain.

The machine is almost completely automatic. The girl in the picture is a 'catcher.' She inspects cigarettes for off-quality, loads tray with cigarettes for the packing machine.

HIGH-POWER ULTRASONICS IS THE best means yet devised for industrial cleaning of small parts, according to researchers at General Electric Engineering Laboratory, Schenectady, N. Y. By directing the high-pitched sound waves through a liquid solvent into tiny corners and crevices, the cleaning action of the solvent is made more effective in removing dirt, grease, and metal particles.

TENNESSEE VALLEY AUTHORITY has announced a process for making light-weight aggregate from electric phosphorus furnace slag. Steam and water are added to molten slag to produce a porous, sponge-like mass. This mass, crushed to desired size, has been used successfully in manufacturing light-weight aggregate blocks.

AN AVIATION TIRE, WHICH CAN hit a runway at 250 miles per hour, has been announced by Firestone Tire and Rubber Co. The tire was fabricated with high-strength nylon and gum-dipped fabric.

GENERAL MOTORS ELECTRO-Motive Division has reduced labor charges on catalog-listed rebuilding operations for its diesel locomotive customers. This is a logical step in Electro-Motive's long-range program involving mass production techniques for diesels and establishment of a U.S.-wide system of repair depots.

THE DISCOVERY OF METHODS for taking the salt out of sea water at relatively low cost opens the way for turning bleak deserts around the world into rich farmlands, a Pennsylvania geographer claims. Dr. J. R. Smith, professor emeritus of economic geography at Columbia University, says researchers at Harvard and Massachusetts Institute of Technology have developed a de-salting process which costs only 'a fraction' of previous methods.

BOEING AIRPLANE CO. HAS DEveloped a new anti-fouling sparkplug for gas engines that it says is the 'first significant design change in sparkplugs in 30 years.' The new plug, not in production yet has its ignition points recessed inside its shell instead of sticking out the end, has been run 20 times longer than other plugs without cleaning.

SEWAGE SLUDGE GAS WILL OPERate supercharged, dual-fuel engines now being installed in Bay Park, Long Island. The engines, made by Worthington Pump and Machinery Corporation, will drive generating and ventilating equipment.

PLAGUED BY LOST GOLF BALLS? B. F. Goodrich is experimenting with a radioactive ball that you can find with a Geiger-Mueller counter.

A SCALE CALLED TELEPHANT, weighs in one place, electronically records the weight in another. The scale

can be set up as far as 500 feet from the recording device. The recorder prints the weight on tags or paper forms. The maker: Howe Scale Company, Rutland, Vermont.

A PORTABLE INVOICE REGISTER for sales counters automatically files carbon copies of sales slips in a built-in clip tray. The manufacturer is Buchen Company, Chicago.

CAMPBELL SOUP HAS GIVEN Massachusetts Institute of Technology $1 million for research studies in biology and food technology.

Business and Finance

THE NUMBER OF CANADIAN firms going bankrupt has increased steadily since the end of the war. A Dominion Bureau of Statistics report discloses that in the first six months of this year there were 848 commercial failures, an increase of 17% over the corresponding period of 1951.

Number of failures has increased gradually but steadily since 1945 from a low of 260 in 1944. There were 272 failures in 1945; 278 in 1946; 545 in 1947; 813 in 1948; 1066 in 1949; 1303 in 1950, and 1399 in 1951.

★ MONTREAL.—A mechanical detective is at work in a laboratory near Montreal, helping research chemists to identify unnamed substances in the daily line-up.

The invisible heat included in all light, and known as infra-red radiation, is the natural phenomenon used as the basis of the new research tool.

Just as no two people have the same finger-prints, no two substances have the same frequency-pattern or absorption spectrum. Working on this principle, an instrument called the infra-red spectrometer is used by chemists at the central research laboratory of Canadian Industries Ltd., McMasterville, Que.

The infra-red spectrometer has many advantages important to the scientist. It can work with quantities of material too small to be handled effectively by other laboratory techniques. It does not destroy the material being examined. It is extremely sensitive to many chemicals otherwise hard to analyze for quantity, for the instrument not only can detect particular substances but can be used to work out the proportion of these substances in the materials being studied.

★ TORONTO.—Canada's first mechanical brain is hard at work solving problems it would take men a lifetime to calculate.

Dr. C. C. Gotlieb, director of the University of Toronto's computation center, said a crew of British engineers finally had hooked up enough of the six miles of wire to enable the giant computer to start operations.

It can multiply 500 pairs of numbers like 6,834,872 times 1,488,639 in just two seconds. Most scientists don't live long enough to figure out one of the complicated mathematical problems it can do in a few minutes.

The computer, christened Ferut, can play checkers. It doesn't always win, but it knows when its human opponent cheats.

The first time that happens, Ferut types out on its built-in typewriter, 'you have made a mistake.' The second time it says, 'read the instructions please.' After the third error it declares, 'go play with a human.'

★ OTTAWA.—Electric lights are putting lighthouse keepers out of work. Transport Minister Chevrier has announced that 108 lightkeepers' positions are being dropped because of electrification of lights along Canada's coasts. —*Canadian Press*

World Oil Cartel

The recent report by the U.S. Federal Trade Commission on the petroleum industry shows how for nearly a quarter-century the world's supply of 'black gold' has been skilfully manipulated by an international oil cartel.

WHAT can be done in the public interest to control the great international cartels, some of which have more political and economic power than national governments? This baffling problem was brought into focus recently by the publication of the Federal Trade Commission's report on the petroleum industry.

The report vivisects the largest and most potent of all cartels. Despite the oil men's denial that a combine exists, no one can read the 378-page document without being convinced that for nearly a quarter-century the world's supply of 'black gold' has been skilfully manipulated by a group of men exercising substantial control over production, prices, and distribution. The control has never been absolute. Every discovery of a new oil field created a problem. The United States' anti-trust laws made this country a difficult market to tame. But one by one the problems always yielded to the concerted action of the oil men; the report is studded with the agreements through which the new fields and the new companies were brought into line. In the United States the petroleum industry made 'conservation' the shibboleth, and pro-rationing became the instrument for controlling production.

Detailed though the report is, there is one aspect of the oil cartel which it scarcely touches. This is the political power acquired by the cartel through its infiltration into national governments. When oil men occupy strategic diplomatic and administrative posts and are members of legislatures and control commissions, it is not surprising that government regulation of the industry proves ineffective. Sometimes, as in Britain, the cartel even enters into partnership with government, an arrangement which may be pre-

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ferable since it is visible and above-board.

But the report does make clear the manner in which seven companies—five American, two foreign—acquired virtually exclusive rights to the major oil fields of the world outside of the United States, Russia, and Mexico. It traces the interlocking directorship and/or joint ownerships through which the cartel controls exploration, producing, transport, and marketing organizations in many parts of the world. It quotes certain basic agreements, obtained for the most part by the commission through subpoena, which show the world-enveloping pattern of the cartel and its guiding principles. The companies concerned say that all international agreements to control markets and production ended with the outbreak of World War II, but the report offers evidence to show that, whether or not the agreements were legally binding after the war began, the signatories continued to abide by them.

The seven companies named as dominating the world oil combine are Standard Oil of New Jersey, Standard Oil of California, Socony-Vacuum, Gulf Oil, and the Texas Company, all American; the Royal Dutch Shell group, controlled by British and Dutch interests; and Anglo-Iranian Oil, owned 55% by the British government.

Suppressed for a year, the report was finally made public by the Senate Select Committee on Small Business, partly as the result of pressure exerted by Senator Sparkman, committee chairman. Its findings have precipitated action against the major oil companies on several fronts. Hearings were scheduled to begin on September 3 before a federal grand jury in Washington on government charges that twenty-one oil companies and six individuals have been in criminal conspiracy to control prices and production of crude oil and petroleum and to allocate markets throughout the world except in the U. S. S. R., its satellite countries, and Mexico. The Department of Justice, at the request of the Mutual Security Administration, has filed three civil suits in Federal District Court in New York to recover more than $67,000,000 from four American oil companies and six subsidiaries in alleged overcharges to the M.S.A.

and its predecessor, the Economic Cooperation Administration, for oil delivered to Western European countries between May, 1949, and June, 1952. Besides these court actions the industry faces a Congressional inquiry and may be the subject of another investigation next year when a special committee of the United Nations Social and Economic Council is expected to report on international cartels.

Spokesmen for the oil companies reacted to the court actions by charging that they were politically inspired. George V. Holton, chairman of the board of Socony-Vacuum, told the press that the M.S.A. suit 'seems to be part of a deliberate program to make this and other oil companies engaged in international trade whipping boys during an election campaign.' If this is true, the Democrats are failing lamentably to make political capital of the report. So far they have neglected to point out that some of Eisenhower's most powerful financial supporters are representatives of Rockefeller and Mellon oil interests who stand to profit enormously from continued high world prices for oil.

It is of course difficult to determine what role, if any, the Presidential contest played in the publication of the report or the bringing of the suits. We do know something, however, of the conflicting pressures that preceded publication. When the report was completed a year ago, the Petroleum Administration, which is dominated by the large oil companies, warned of dire consequences should it be released. This position was supported by some members of the State Department. The document was finally referred to Central Intelligence, which obligingly stamped it 'secret.' In succeeding months Clark Clifford and former Secretary of the Navy John L. Sullvan, acting in behalf of American oil interests, advised the President against releasing the report.

Meanwhile forces were gathering on the other side. Howard A. Cowden, president of the Consumers' Cooperative Association of Kansas City, Missouri, one of the largest farmer oil cooperatives in the country, was eager to get the report before the public—the cooperatives have always maintained that the oil cartel operates against the public interest as well as their own. The Missouri Farm-

ers' Association, also in the oil business, was similarly interested. Cowden, representing the International Cooperative Petroleum Association, saw Prime Minister Mossadegh of Iran when he visited the United States early this year and discussed the possibility of having the Abadan refineries operated by cooperative groups from a dozen countries, including Britain and the United States. Mossadegh's initial response was favorable, but the State Department turned thumbs down on the idea. Cowden then appealed to Senator Hennings of Missouri, who immediately launched a campaign to bring into the open all the facts concerning the oil cartel. On April 16 Hennings frankly demanded that the 'secret' classification of the Federal Trade Commission report be changed. Subsequently Sen. Sparkman joined in the fight, and the President, who may never have really believed in the necessity for suppressing the report, consented to its publication, with certain sections deleted in the interest of national security.

It is interesting that just as the American cooperative movement helped to bring about the present showdown with the oil cartel, so the Swedish cooperatives were largely responsible for an earlier inquiry. In 1945 the Swedish cooperatives, irked by the restrictive influence of the cartel, brought about the appointment of a parliamentary commission which announced its findings two years later. Many of these findings are incorporated in the F.T.C. report.

The Swedes established that as early as 1928 representatives of Standard Oil, Anglo-Iranian Oil, and Royal Dutch Shell signed a cartel agreemnet which was to serve as the basis for all succeeding compacts. Known variously as the 'as is' or Achincarry agreement, it provided for all the essential elements of monopoly—production and marketing quotas, prices, export quotas, and so on. Its terms were kept strictly secret by the oil companies. The 'as is' document was supplemented by other agreements in 1930 and 1932. In 1934 a 'Draft Memorandum of Principles' was drawn up which, though never formally signed, appears to have had the force of an international agreement. Its introduction as given in the Swedish report reads in part:

'This memorandum is to cover all countries to the extent that it is not contrary to law. The United States and territories under its jurisdiction and such countries in which its provisions would be contrary to law are expressly excluded.

'In any market where all of the participants operating in such markets are members of a cartel in such market or may unanimously agree to become members of a cartel in such market, such cartel agreement as may at present exist or come into existence may by unanimous consent override this memorandum for the market and product during the duration of such cartel.'

Commenting on the testimony of an attorney for the Shell group before the parliamentary commission, the Swedish report says:

'He thought that a document such as the "as is" or an agreement based on the "Draft Memorandum of Principles" was in clear opposition to American antitrust legislation. Representatives of British companies in Sweden discussed these agreements as cautiously as possible, in order that their American colleagues might not be caused any inconvenience.'

Before making public its report in 1947, the Swedish commission showed a draft to the oil companies, requesting comment, and this was subsequently incorporated in the final report. A representative of Standard Oil maintained that the commission, instead of examining the international aspects of the cartel, should have dealt only with its effect in Sweden. He added:

'We must demand that the notes not be made public in their present form, since they are concerned with business and operating conditions whose disclosure to the public can, on the one hand, cause us economic harm and, on the other, is not necessary for the execution of the investigation's task. . . . We must decidedly protest against the publication of those confidential agreements or communications of an international character.'

The Swedish inquiry brought some alleviation of the domestic oil situation; the international problem remained. In 1947 Thorsten Odhe, director of the International Cooperative Alliance, placed before the U.N. Economic and Social Council a series of proposals for international con-

trol of the oil industry—to implement Article VII of the Atlantic Charter and 'to assure that all nations, large and small, can buy oil on an equal footing.' Mr. Odhe declared:

'The salvation of the United Nations and the peace of the world can come only if the organization is able to face and handle the great economic empires, the real superstates of the modern world. No government has been able to control the oil combine in the general interest. We hope the United Nations can do so.'

But the U.N. agency decided to postpone discussion of Mr. Odhe's proposals until 1949. In that year and in 1950 discussion was again postponed. In 1951 the item was deleted without the pretense of postponement. Each time the chief objectors to its consideration were the Americans and British, who between them control about 90% of the world's oil resources outside the U.S.S.R.

Whether the current spate of activity affecting the oil companies will have lasting and beneficial results remains to be seen. Meanwhile the oil cooperatives—American and international—believe they hold the key to at least one problem—that of Iran and the Abadan refineries. They are convinced that operation of these refineries by the cooperatives, perhaps as a trusteeship pending a decision of the World Court on Anglo-Iranian's interests, would satisfy Mossadegh's desire to avoid doing business with the British. And they are also convinced that such an arrangement would tend to reduce oil prices in the United States and throughout the world.

—Barrow Lyons

★ NEW DELHI, India.—Twenty million Indian peasants are suffering acute distress because of crop failures in Madras, Bengal, Uttar Pradesh, and Rajasthan states, according to reports reaching here.

Paradoxically, government warehouses are so filled with grain that the U.S. and Canada have been asked to postpone shipments of 750,000 tons of wheat until next year, and the central food ministry hopes to reduce next year's total grain imports by 25%.

The explanation for this contradictory situation, according to government analysts, is a lack of purchasing power on the part of the population.—*New York Times*

★ TOKYO.—Overproduction is the chief threat to the Japanese economy, according to the Economic Review Board. The Japanese agency says that production is 15% higher than Japan's domestic and export needs.

Real Patriotism

Most people want to be patriotic. Most of them think they are. But the term has been bandied around so loosely by political self-seekers, propagandists, and other status quo champions that its real meaning has been lost to them.

PATRIOTISM means many things to many people. While Noah Webster defines it as 'love of country, or devotion to the welfare of one's country,' it has otherwise somewhat scurrilously been described as 'the last refuge of the scoundrel.' Certainly, more national and international chicanery is perpetrated in the name of 'patriotism' than any other word in the dictionary.

Most people **want** to be patriotic. Most of them think they are. But the term has been bandied around so loosely by political self-seekers, propagandists, and other status quo champions that its real meaning has been lost to them.

To the average person patriotism infers loyalty to a politically-defined area and its prevailing ideological form of government within a usually larger geographical mass of land. This concept demands an almost fanatical devotion to that political realm from its residents, even though, because of too-large population within a too-small and mismanaged land area, they may be experiencing severe physical discomfort.

In the course of time, certain nations have established parliamentarian forms of political goverment wherein opposing parties — only superficially different — strive for control through the ballot. During their campaigns to induce the electorate to vote them into positions of national responsibility, candidates will stop at nothing to vilify or castigate their opponents. Then having called their opponents national traitors, they fervidly declare their own unshakeable patriotism. This is a negative and destructive concept.

Fundamentally, patriotism is a much deeper thing. In its most profound sense, it is undivided loyalty to the physical entity of the **land** from which one derives his living—**not** to the superimposed form of governance. This governance merits support only so

long as it effectively produces and distributes vital goods and services to all citizens. When it fails to perform this basic purpose of all society, though the means to do it are abundantly at hand, it should be discarded. It is **un**patriotic to support it.

Man, being a physical organism, derives his sustenance from the earth from which he sprung. Our vast and intricate web of productive and distributive equipment, which p r o v i d e s us with food, c l o t h i n g, shelter, transportation and communication, had its roots in the **earth** . . . aided by all-important sunlight.

Somewhere along the line we've got our wires crossed. Whereas society was originally and primarily designed to serve the needs of its members, we now see this fundamental purpose being subverted to the point where its members live — and die — for the aggrandizement and glorification of that society. We have become enslaved to the very instrument contrived for our benefit. Our present society, far from being recognized as a **means** to an end, is considered as an end in itself.

We have the incongruous picture of people swearing allegiance to **political** entities in the guise of the nations within which they reside. Frequently t h e s e nations, being mere outgrowths of small societies, are too s m a l l for the land therein to support the existing population, yet the same hysteria of national sovereignty is maintained. It assumes an even more ridiculous aspect, with citizens showing narrower 'patriotism' toward smaller segments of a nation, such as provinces or states, municipalities, cities or even tiny villages.

Pride of d e v e l o p m e n t is a natural inclination and should be encouraged, but s i n c e the so-called 'patriotism' is more of a political than a physical nature, it achieves no worthwhile purpose. The smaller the unit, the more dependent it is upon the facilities of the rest of the land a r e a for its necessities, and of course this situation reaches its ultimate phase in urban centers which are totally dependent upon outside resources a n d their development. Accordingly, it is nonsensical to display allegiance toward the political administrations of these small political areas, for they form obstructions to the free flow of physical commodities.

Cities and towns, within limits, at least afford some degree of physical and social advantage to their residents who for the most part prefer community existence. Provinces and states and other subdivisions cannot claim even this distinction.

A **Continental** concept of patriotism on a physical basis is the only one completely adequate to the needs of the people living within that area. Every political boundary line thereon constitutes a barrier to the efficient operation of the total physical equipment. Rivers, mountain ranges, and other geographical phenomena are no respecters of boundary lines, and must be surveyed according to their physical characteristics in order to derive maximum efficiency in engineering them. The Continental area of North America possesses every climatic belt, soil formation, and geologic composition to supply abundantly all required foods, clothing materials, and metals for machine fabrication. In addition, it also possesses the world's most favorable supply and arrangement of fresh water from which can be derived almost limitless hydroelectric power, as well as a Continental web of low energy-cost water transportation and bountiful irrigation. If we are to survive, it is not only desirable but **vital** that we operate our physical equipment and utilize our resources on a Continental scale.

Even now, the necessity of this is recognized on a limited scale when emergencies arise. A good example of this is the joint work of the Canadian and United States governments, via the International Pacific Salmon Fisheries Commission, to save the sockeye salmon run on the Fraser River since the 1913 disaster when a massive rock slide almost blocked the river at Hell's Gate, turning it into a raging torrent. The salmon, going up river to spawn in their home streams, were unable to pass this obstruction and perished in thousands in the waters below. The International Boundary was completely overlooked in the work of finding a solution to this problem which almost spelled death to the salmon industry, and imperilled the economies of both countries. Through the application of science and engineering, the problem has almost been beaten.

For the most part, though, our

congenital stubbornness and social stupidity prevent us from abandoning our attitudes of nationalism . . . and even imperialism.

Empires have arisen partly because more land was required to support growing populations at home, but mainly to bolster the weakening economic positions of financial interests. These captains of industry, being the chief beneficiaries of the low cost raw materials received with military and political aid from the colonial possessions, controlled the economies and hence the future aspirations of the respective empires. Naturally they indulged in propaganda campaigns to imbue the nationals and colonials with 'patriotic' fervor for the continued progression and enrichment of the empires.

Despite the false, superificial front that society has unfortunately assumed, however, it remains the major influence assisting man to derive his needs from the earth. Empires have arisen and fallen, politicians have come and gone, and industrial tycoons have made fortunes and lost them, but behind it all the basic fabric of society has continued to grow and improve. Scientists and technologists have uncovered many secrets of Nature and put them into the service of mankind.

North America today has the most highly integrated social mechanism and the greatest array of technological equipment for the production of goods and services that has ever existed anywhere at any time. If it were to cease operating for any extended period of time, 85% of the population would shortly perish — irrespective of the futile manipulations of business and politics. All the ingredients are here to provide a standard of living for everyone twenty times higher than the present average, and to ensure its maintenance for an indefinitely long time into the future.

Yet most people, including many in fairly remunerative positions, are constantly haunted by the spectre of insecurity. Society has failed us. Despite our physical ability to supply all citizens with abundant shelter, food and clothing — plus many luxuries — our society has muffed its responsibility on all counts. None too efficient even under the scarcity conditions which for natural physical reasons prevailed when

it started, our Price System society is totally incapable of coping with the abundance which our science and technology has produced.

Why, then, do we persist treasonably in trying to maintain it, when, for many years, a design of operation especially tailored to the requirements of a high-energy, technological mechansm, has been available and ready for use?

Since 1932, Technocracy Inc. has been telling North Americans that their Price System could not distribute abundance because plenty ruins price, and, in order to acquire their physical necessities, they had to sell their manhours of service to obtain the money to buy those necessities. This was a diminishing hope as technology, marching further into industry, displaced manhours with more efficient, faster-working, and non-striking kilowatt hours. Because fewer manhours were required, less money in the form of wages and salaries was circulated in ratio to increasing commodities.

Technocracy also warned North Americans that their Price System could be maintained only through the instrumentality of colossal destruction programs to create artificial scarcity and thus maintain prices. The wholesale destruction of consumer goods in the 'dirty 30's,' World War II, Marshall Aid, UNRRA, ERP, ECA and the current abortive Korean campaign have all borne out the validity of that warning.

It is now generally conceded that North America is more afraid of peace than of war. **No more shocking indictment could be charged against society!**

A blueprint of operations specifically designed to the requirements of a high-energy society is open to the investigation of all North Americans. To help them in their investigation, Technocracy holds frequent public meetings throughout United States and Canada, conducts study classes, and prints and distributes numerous pieces of literature.

Adoption of this design will once again place man and society in their proper relationship. It hardly need be added that with the citizens' needs and comforts being of prime consideration, careful, scientific husbandry of the land and all our natural resources will automatically result.

Investigation and promotion of

Technocracy's program will categorize you as a North American of foremost intelligence and patriotism. **—Rupert N. Urquhart**

CORRECTION

In issue No. 145, August 1952, there appeared a couple of typesetting omissions which were not caught in the proof-reading, but which tended to confuse the continuity of thought at the points where they occurred.

On page 10, top of column 2, it should read: "... The only questions of pertinent significance would be: What is the social objective? What projects are required to **achieve it? What materials are required** and from where can they be obtained at the least social cost? . . ."

On page 12, the bottom paragraph of column 1 should read: "There are four major aspects to any modern military operation: Designing and production of **materiel; recruiting and training of the personnel; movement of** materiel and personnel to the places of use; and field operations. . . ."

★ WILL OUR NEW LEADER accept war in preference to depression? This is one of the gravest hazards we face. Eisenhower has recognized the fact, saying repeatedly that we live in a 'war economy'. We do, and if the giant war orders are sharply reduced, we shall face the danger of world depression. The economy of Western Europe, already overburdened with armaments, is faltering visibly, open to grave trouble should there be even a mild recession in our dominant economy.

The Research Institute of America has recently warned American business men to prepare for a 'recession wider, deeper, and longer lasting' than any since the thirties. If the crisis comes, it will be met either by the development of a garrison state or by a return to the concepts and practices of the welfare state. Then we would really be impaled on the horns of the dilemma our hysteria had created. Would General Eisenhower, advised by the coterie of old military friends that would surely surround him, take the road to militarism or give us a bigger and better New Deal? Would his Taft-controlled Congress ever vote to distribute the abundance of our productive machine to the people instead of channeling it into the bottomless pit of war? *—Prof. D. F. Fleming in The Nation*

★ TOKYO.—A Japanese electronics expert predicts that in two years Japan will see the perfection of a 'voice typewriter' which will write out automatically what is spoken into it.

The prediction was made by Dr. Hideo Seki of the Radio Wave Research Institute of the Postal Ministry. *—Associated Press*

No Politicians Need Apply

In place of the present Price System we will have to introduce a new method of social operations. It will be largely a change of control mechanism and removal of the interference—the interference of politics and price.

TODAY we are surrounded by change in many forms, but in the main it is 'the change in the rate of doing work' that is affecting our lives, as no generation has been affected in the past. In other words, the machine is doing the work which man has always done in the past. But, in spite of this change, which we have come to accept and appreciate the advantages of, the population generally is skeptical and opposed to anything that tends to divert their actions or thought patterns from what they have come to regard as 'normal' or usual.

Technocracy Inc. is pointing out the necessity for a change in our method of social operation, so it will conform to the new means of physical production—a change that would bring about a change in our behavior pattern and attitude. Since its inception, the Organization has carried on an educational campaign informing the citizens of North America that the present method of social operations is heading for the scrap heap, on account of its inability to distribute the abundance of goods our technology produces.

In place of the present Price System we will have to introduce a new method of social operations. A change is imperative.

In spite of the desirable features manifest in the new method, many people are reluctant to part with the old, as corrupt and inadequate as they admit it to be. And then, finally realizing a change is necessary they insist it must be gradual, that sudden change is too much for one generation to absorb.

But this change would not be as hard to absorb as they suppose. It would be largely a change of the control mechanism and removal of the interference—the interference of politics and price. The functional personnel, those who today operate our physical production and distribution tech-

niques, would be capable of understanding and govern their actions accordingly.

We are going to use an illustration of a sudden change which did take place, where the functional personnel set about in an organized manner to effect a new method of operation. It affected the population to a considerable extent in that they had of necessity to change their behavior pattern. But they adjusted themselves to it, in a short period of time, and soon it was the 'normal' way to behave.

As many of the early settlers of this Continent came from England it was natural that they adopted some of the English methods. One was the habit of driving on the left side of the road. As the automobile came on the scene some districts changed to the right side. There was confliction on the subject until an agreement was reached that the right side of the road would be the correct one to drive on. But by this time the city of Vancouver, B.C., had installed one of the first (if not 'the first') street electric railway systems on the Continent. It was designed for the left hand drive. The intersections with their maze of switches operated that way, and the cars travelled on the left hand track.

When the automobile became more efficient, and better roads were built, tourists from other parts visited the city and there was constant confusion. Too, citizens of Vancouver began to acquire cars capable of visiting cities in the United States. When there, they were forced to drive on the opposite side of the street to what they had become accustomed. The problem was becoming acute, and although they knew it would eventually have to be solved, it was postponed time after time.

There was danger of chaos if a rapidly expanding metropolis such as Vancouver was allowed to become so far out of step with the Continental operation. How to go about the changeover—that was the problem. The politicians could legislate, making it illegal to drive on the left side of the street. They could levy fines for failure to comply, and so attempt to force the public to adopt the new way. But there was a factor which they could not control — the physical fact that the street electric railway system had miles of track and hundreds of switches, all design-

ed for the left hand operation. No legislation or financial edict would have the slightest effect on it.

The B.C. Electric Railway Company, whose problem it was, as owners of the system, decided it would have to be solved soon, and it might as well be **now.** Whom did they turn the problem over to? The directors . . . the auditors . . . the president? No, to the only ones capable of understanding and coping with a physical problem. The engineers who had designed the system in the first place, and who could effect a change where necessary.

Remember, this change could not be a gradual one; it had to be done over the entire system simultaneously. It meant organization, it required a planned operation, and would need personnel who could understand and carry out a stipulated job.

The engineers put their heads together and agreed on a line of procedure. They first decided upon a date, which would at once mark the end of the old method and the beginning of the new. They set midnight, December 31, 1921, as the momentous deadline. All conductors received instructions to take their cars immediately to the barns at that time. The crews were briefed, each man knew what he was to do, and was instructed so he could carry it out efficiently.

Zero hour came . . . midnight, December 31, 1921. The populace were celebrating the new year as the gangs of men moved in to the intersections. The last cars clanged their bells and hastily departed for the barns. Busily the men went to work, tearing, heaving, taking apart and putting together again. Through the long night they toiled, as the revellers wended their various ways home to sleep off a night of fun and frolic.

Seven o'clock in the morning arrived—the morning of January 1, 1922. Out of the barns rolled the cars, **on the right side of the streets,** and many people were late for work, for through habit they waited on the wrong corners. The corners they had become used to catching their cars on, but which now were across the street from the new car stops.

It is interesting to note that in the entire procedure—the change from one method of operation to a new one—the democratic process had not been used. No vote had been taken; the people as a

whole were not consulted. It did not require an order-in-council, nor a speech by the Premier. In fact, a politician on the scene would have only confused and interfered. The citizens who depended on the street cars for transportation soon became adapted to the new method, and eventually another generation sprang up which had never known the old.

Today, on this Continent, our social operation is just as much in conflict with the physical method of doing things as the city of Vancouver was with the Continental method of transportation prior to 1922. Technology has accelerated events and speeded up our way of life so much in the intervening years that it is more than unsatisfactory to continue with the two in conflict. It is highly dangerous, and unless we make a decision soon, physical events will do it for us.

If we are unprepared when that time comes, if we are still fighting **change** instead of moving with it, we will be ungulfed, for a technological society must be controlled or it will get out of hand. We have been postponing the day of decision year after year, for the changeover should have been attended to over twenty years ago. That was when the old method, the Price System, almost came apart. Since then it has been with us only because of artificial means of stimulation, such as relief, war, subsidies, destruction and waste.

As it was necessary to organize, with trained personnel knowing what they were going to do, to effect a change back in 1921 of one small phase of our Continental operation, so today it is imperative that we organize on a Continental basis. We must organize to re-align our distributive and productive mechanisms so that they will remain in harmony instead of conflict.

North Americans pride themselves on being so progressive, with tremendous capabilities, with the determination to do whatever they set out to do. Fellow North Americans, we have a job to do, and we cannot postpone it much longer. We must change our social control from an obsolete Price System method of dividing a scarcity to the technological distribution of our abundance. Technocracy invites you to investigate its method! **—Ed Broderick**

Crime Menace Grows

Dr. Austin H. MacCormick, professor of criminology at the University of California, has estimated that the annual U.S. 'take' is about 20 to 30 billion dollars a year—about one-third of the federal budget.

NEW YORK. — A noted crime expert said here that a growing wave of 'white-collar crime' is menacing the nation.

Listing bribery of tax agents, war and defense profiteering, and 'influence' buying and selling among examples of developing white-collar crime, Austin H. MacCormick, professor of criminology at the University of California, warned:

'White-collar crime is not only a constant threat to the integrity of business and professions within whose activities it is committed, but it also sets the standard of honesty for the middle and lower socio-economic classes.

'It tends to confirm their belief that sharp practice and low ethical standards in general are not only justified in our highly competitive order, but are necessary to success and sometimes to survival.'

Assailing 'innumerable' illegal practices in business and the professions, Mr. MacCormick, addressing a 'conference on the future' sponsored by the Mutual Fire and Casualty Insurance Companies in New York, declared:

'Among the most arrant of the white-collar criminals are the lawyers who guide the wandering footsteps of business men who are stepping outside the law.'

Mr. MacCormick, former director of the U.S. Bureau of Prisons, reviewing the history of crime in America over the past 200 years, found this development:

'The predominate motive in the crimes of the mid-1700s in Colonial America was need . . . in the mid-1800s it was a combination of need and greed . . . today it is primarily greed.'

Pointing out that with boom, depression and war the U.S. has not had a 'normal period' since the first World War, Dr. MacCormick said:

'We are living now in a frenetic age, fast-living and fast-dying, in

which our great volume and variety of crimes, particularly organized crime, with its dependence on swift means of communication and transportation and on an inexhaustible supply of reckless and restless dollars, is a wholly logical development.'

Mr. MacCormick cited estimates that the annual 'take' is between 20 and 30 billion dollars a year—about one-third of the federal budget, and that 200 to 400 million dollars is spent annually by slot-machine racketeers alone for bribery and corruption.

Although conceding that organized crime syndicates are now the nation's major law-enforcement problem, he warned:

'Few things have ever done more damage to the faith people must have in their governments, if they are to consider laws worth observing themselves, than the recent revelations of wholesale corruption in the internal revenue service.

'The public, moreover, is not so blind as not to know that a bribe requires two conspirators: the one who offers it as well as the one who takes it.'

—International News Service

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WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the member to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska, Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Technocracy is the most forceful and dramatic proposal for economic planning that has ever arisen in the United States.

—Prof. John W. McConnell of New York University

TECHNOCRACY DIGEST

MAY '53

When Is There Over-Population?

100-Billion-Dollar Grab

Technology in the Restaurant

Coal by Remote Control

Must the Change Be Drastic?

Selling an Abundance

These Ignorant Foreigners

New Age of Printing

No. 148

PUBLISHED IN CANADA BY SEC. 1 - R.D. 12349

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

MAY, 1953 **No. 148**

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The Quarterly Survey

Reproducing Robots

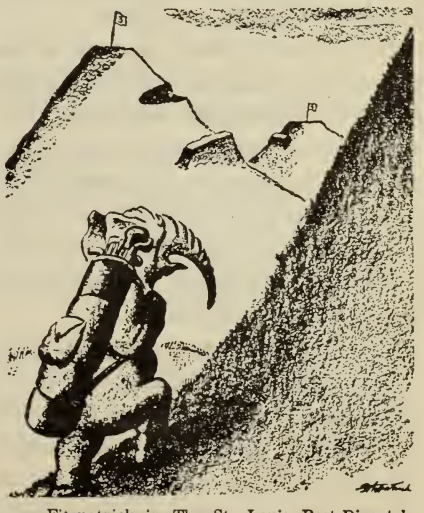
A Bell Telephone scientist stated recently in Cleveland that there are plans for a machine which can reproduce itself. C. L. Shannon of the Bell laboratories, discussing computers at the Case Institute of Technology's 75th anniversary celebration, 'hastened' to add 'this fascinating but somewhat sinister type of machine is not yet in production.'

A mathematician, he claimed, has set up an abstract mathematical model for machines which will 'collect parts from its environment and assemble them to produce a second machine of the same type, which then starts collecting parts to construct a third machine and so ad infinitum.'

Computers, Shannon said, differ from adding machines in that they are faster, have large 'internal memories' and can be programmed—they can be instructed so that they can make a choice or decision among various lines of behavior.

Equipment of this kind can be 'set up to play various games with a certain amount of skill, games of the complexity of bridge or chess.' Another device described by Shannon can do grocery store shopping 'efficiently.'

According to Norbert Wiener, professor of mathematics at the Massachusetts Institute of Technology, we are just around the corner from a second industrial revolution in which automatic machinery will replace workers on assembly lines and electronic instruments will, within limits, re-



Fitzpatrick in The St. Louis Post-Dispatch

"The Course Is a Little Rougher Than I Expected"

place the human mind in making decisions.

Dr. Wiener thinks that once automatic machinery takes over, mankind will finally enter a golden age of abundance and culture and leisure—in short, a Technocracy.

The Threat of Surpluses

Since the war, by and large, surpluses have not been a serious problem; they have been taken care of by a vast expansion in domestic consumption and by the growth of exports financed to a considerable extent by grants and loans to foreign countries.

Now a new phase appears to be at hand in Canada and the United States. Although domestic consumption remains very large, industrial production in many lines is beginning to overtake it. And in the field of agriculture we have mounting surpluses of several leading commodities.

Export markets, however, are threatening to grow tighter, partly because of production recoveries abroad, partly because many foreign countries are becoming as reluctant to accept more American aid as Congress is to grant it.

Before long North Americans will see a return to the conditions of the 'dirty thirties'—with goods being destroyed to maintain the obsolete Price System while people starve in the midst of plenty. Only Technocracy can distribute abundance to all the citizens of this Continent.

Machines vs. Muscles

Everybody knows that modern inventiveness and machines are far more efficient than the muscle-powered devices of bygone times. But how much more efficient? The Truck-Trailer Manufacturers Association, Washington, D.C., has come forward with an exact and illuminating answer:

In 1586 Pope Sixtus V decided to move an Egyptian obelisk weighing 350 tons from the Circus of Nero in Rome to St. Peter's Square in the Vatican. Because of religious holidays, 91 working days were required to shift the stone shaft 850 feet. But the usual workday was 15 hours for the 900 sweating laborers employed, making a total of 1,228,500 man-hours.

The Association estimates that today only five men and five heavy-duty trailer-haulers could perform the stint in less than one

hour. In other words, modern machines are some 245,780 times faster than the brawny men of 1586.

Price System Menace

Stock and commodity markets in the United States and Canada have been wobbling for weeks under a wave of selling brought on by the resumption of peace talks in Korea and a more friendly attitude by the Russians toward the West.

Authoritative publications like Harper's Magazine, The Nation, The Manchester Guardian, and the London Economist have recently carried articles which express fear of another depression if peace comes or even if defence spending is curtailed.

Technocracy points out that it was only World War II that lifted this Continent out of the Great Depression of the 1930's. And if it were not for the blood transfusion given the Price System by the Korean war, North America would now definitely be in another serious depression.

A social system which depends upon wartime conditions for its existence is not a healthy system to have around. We had better get rid of it, before it gets rid of us! **—The Editor**

★ SAINT JOHN, N.B.—Gordon G. Cushing, secretary-treasurer of the Trades and Labor Congress of Canada, said here that world peace would mean severe unemployment in Canada.

The 40-year-old labor official said Canadian labor leaders anticipate 'very serious' unemployment if genuine peace 'comes fairly fast.'

'It's too bad that employment has to come with war,' he commented.

Mr. Cushing said coos from the Kremlin dove are causing many wage earners to worry about possible layoffs.

'The average Canadian worker isn't saving money. He never has. With nothing behind him, he's wondering what will happen to his family if he loses his job.'

—Canadian Press

★ OTTAWA.—Fear of a world depression, perhaps within two years, is held by the Canadian Importers and Traders Association, embracing about 400 import firms.

Thomas Oakley, past president of the association, said there are signs of slackening spending among Western countries. This would result in decreasing world trade.

Oakley said another world depression 'will probably bring about another war.'

—Canadian Press

★ MINNEAPOLIS.—A 'player-piano' type robot that will direct the take-off, flight and landing of an airplane without a human hand touching the controls has been developed for the U.S. Air Force, it was announced recently.

Minneapolis-Honeywell Regulator Co. said it had developed the device for air research and development command. *—British United Press*

When Is There Over-Population?

Before one can approach the subject of over-population, one must first define the general standard of living to be dealt with. If the social goal is to breed as many low-grade human beings as can be kept from dying, then the world is far from 'over-populated.'

POPULATION densities on various parts of the earth have become so heavy that serious recognition of the situation and its attendant problems is being forced upon all people who are concerned with thinking and planning in the social field. There is considerable disagreement over definition of terms and human objectives; so, in many ways, the problem is confused. But, whatever may be the views and thoughts of others on the subject, the analysis and social objectives of Technocracy are clear and definable.

There appears to be two general views on the subject of over-population, and these are almost diametrically opposed. One view is that held by most scientists and social realists. It contends that many parts of the earth are already too heavily populated, and that the earth as a whole has too many people. These people are inclined to favor birth control programs in, at least, the more densely populated sections of the globe.

The contrary view, held most often by disciples of authoritarianism, argues that the earth is not over-populated, and that many more people could be supported than now exist. Supporters of this view even refuse to admit positively that any area is over-populated; although, when they are asked about Japan, Holland, Britain, and Italy, among others, they resort to jesuitical evasiveness. This view is most strongly voiced by the adherents of certain religious cults which hold that there is a virtue in having the maximum number of people that can be kept alive on an area; or, at least, be kept from dying until the priests have had time to 'save their souls.'

This latter view is cleverly supported by the scholarly and, in some ways, brilliant work of Josue De Castro, 'The Geography of Hunger.' The former view is given

solid positive support by the careful study and statistical evaluation of Robert Cook and his Population Reference Bureau, Washington, D.C.

Those who favor immense population densities are extremely limited in their thinking about human needs. They tend to think only in terms of food requirements. Their arguments hover around the concept that, if a person has enough to eat to keep from dying—or if there is a potential means of supplying him with this minimum amount of nourishment — one cannot claim the existence of over-population. They adroitly argue for the encouragement of more billions of people on the earth; through more intensive cultivation and production of food crops, through farming the sea, and through a more equitable distribution of the world's food products. They appear to be satisfied if there can be provided an average of half an acre of mediocre arable land for each of the world's inhabitants. Conceivably, a person can be kept from dying on a half acre of moderately productive land, but, what else can he do? Nothing.

The students of population who display a more scientific and appreciative concept of man's requirements contend that each person requires a minimum of two acres of good land to supply him with adequate food, fiber, and other organic crops.

But, a further insight into the problem reveals that food is not the most difficult and most critical of man's requirements; that is, if man is to have any other objective in life than merely not starving to death on a day-to-day basis. If there is any virtue in the 'American Way of Life,' as contrasted with the lives of most other geographical blocs, then, there are factors more critical and potentially more explosive than the food supply. Long-term supplies of energy and metals present a more immediate urgency. Even though we ignore the demands and desires of all other people on the earth, we can well ask with apprehension, 'For how long, and from where, will the people of the United States be able to obtain enough petroleum, sulfur, lead, zinc, copper, and iron ore to maintain the standard of living of which they now boast?'

If it can be considered that America's economy is more de-

pendent upon any one resource more than another, that resource obviously would be petroleum. But, although the United States is the world's Number One producer of petroleum, it still does not produce enough for its own current requirements; and its known reserves, measured in terms of years ahead (but not allowing for an increase in consumption), can be counted on the fingers of one's two hands. And this remains so, in spite of a most frantic and desperate search for new oil pools. Besides that, the United States is importing around a million barrels of petroleum a day from sources that may not always be available to us. As the increased mechanization of the rest of the world places ever stronger demands on the petroleum supplies, the United States' oil merchants may soon find that the world does not belong to them alone.

Suppose that **one half** of the earth's population should decide that it wants a standard of living **half** as high as the average for the United States? The scramble for energy and mineral resources would, indeed, be vicious; and the life expectancy of that debauch would be very short. The situation would become ridiculous if **all** the world's people decided they wanted a standard of living **equal to** the average in the United States. We are speaking, now, of standards of living under the wasteful and inefficient practices of Price System enterprise. So, in terms of such aspirations, the world must be considered already as enormously over-populated.

Before one can approach the subject of over-population, one must first define the technological stage of development and the general pattern of living to be dealt with. If the social goal is to breed as many low-grade human beings as can be kept from dying on the earth, existing at the bare survival level, in abject poverty, degradation, and superstition, without hope of ever doing anything other than keep from dying until 'their souls are saved,' then, of course, the world is far from 'over-populated.' Perhaps, on that basis, the present population of the world could be doubled, or, if it could be efficiently organized and adequately enforced, tripled or quadrupled. Technocracy has no interest in that kind of mass incubation; but, we must be warn-

ed, there are powerful interests in the world who earnestly want just that for the great bulk of mankind. The tyrants of fascism would ask for or want nothing better.

Most people are satisfied with very little in the way of human comforts and all they require is that these comforts be not too hard to come by. But there is a certain percentage of people in all lands who have a strong urge to seek personal aggrandizement through a conspicuous display of wealth in the form of physical goods and articles with high scarcity values. These latter people seek to promote themselves into control of as much of the world's loot and authority as they can acquire, and the exact means of acquiring them are secondary. However, predation and spoilation are the most favored means as these tend to get the most results in the least time, and with less need of personal ability, than any other means. Thus, the wars and crusades of history mostly have been undertaken to gain loot and thrones for those who aspired to social grandeur — at a terrific cost in poverty, suffering, and death to the masses of the population.

Probably the most potent factor in the hysteria that now sweeps America is the panicky fear in 'high places' that more and more of the world's suppressed peoples are going to demand a greater share in the resources of the earth and thus close them off to exploitation by American enterprise.

In any society the self-promoters are the great hazard to the general welfare. They find their greatest satisfaction in reaching a high place in a fascistic order; but, under any phase of the Price System, they find conditions fairly favorable for social and economic 'climbing,' although bad luck and competition thwarts most of them before they reach their goals. Ambition and ability do not always go together. Any society that is to endure on a stable basis must be so organized that it can keep its self-promoters in check and not debase those who are short on luck or initiative. The ultimate in alternatives would be a King Solomon with his myriads of slaves, a Nizam of Hyderabad with billions of dollars in personal wealth and surrounded by mil-

lions of wretched untouchables, or a Hitler with innumerable estates, schlosses, and monuments, and slave battalions and death camps.

Food is only one requirement of a population; but the quality and variety of that food is fully as important as the mere quantity. Undernourished or malnourished masses of humanity are no credit to mankind, however they may be regarded by certain spiritual authorities. An adequate diet of tasty, nourishing, and vitalizing food in a variety of forms for all of the inhabitants must be considered as a minimum requirement in defining the optimum population load of an area. Whenever the amount, quality, or variety of foods must be restricted because of limited supply, we contend that the area is burdened with an excess of population; certainly so, in this Power Age.

Housing is another factor in any standard of living; and, throughout the world, there is a deficiency of comfortable housing. Millions of people are without housing of any kind, relying on natural shelters or miscellaneous man-made structures to shield them from the worst of the weather. Other millions live in mere tents, huts, and mounds, or in crowded warrens, which are unsanitary, unstable, and often only token protection. Before one can appraise an area from the standpoint of maximum allowable population, one must include the capability of providing all the inhabitants with suitable housing.

In planning housing for the people of the earth, one type of housing above all others is **out.** This is the type of shoddy, costly houses that are now proliferating over the suburbs and along the highways of North America. In this age of technology, there is no physical reason why everyone should not have a decent dwelling place; but, to build and maintain 'suburban' housing for all the people of the world is beyond the capacity of the physical factors. For one thing, too much land is sacrificed—land that is needed for raising crops. The transportation lines, over which routine daily movements and deliveries occur, are too extended. More fresh water is required than is available in many places. Too much scarce metal is tied up. The houses consume too much fuel; and they are not durable enough.

When dwellings are properly designed and constructed, using materials which are abundant and capable of being fabricated at low cost, there can be provided adequate housing for the people of any area—to the full extent of the population density that other factors will permit. By adequate housing, we mean at least one spacious, pleasing room for each individual, affording privacy, comfort, and personal living conveniences, with other attendant facilities conveniently near at hand. The construction would involve the use of durable materials and reduce to a minimum the utilization of scarce and non-replaceable metals. The buildings must be well-insulated, so as to eliminate wasteful use of fuel and water for heating and cooling. The housing must be spread thin over wide areas of land that is needed for other things, and thereby, also extend the transportation and utility lines beyond the limits of efficient operation and run up the costs of heating and maintenance.

Before it can be claimed that any specific area is **not** over-populated, it must be shown that adequate housing, as well as a healthful diet, can be provided for all the people living there.

The supplying of suitable clothing is another item to consider, and an important one; but this is not as critical as food and housing. The development of synthetic fibers is reducing the demand for huge acreages of land devoted to the raising of plant fibers and to the grazing of wool-bearing animals. Even so, accounting for the production of textile materials must be included in any valid estimation of the potential population capacity of an area.

The amount of fresh water also is a potent limiting factor. Lack of water renders huge areas of the earth's surface practically uninhabitable. Until ways and means can be found for increasing the fresh water supply, many areas must remain restricated in their population density. The water is needed for household uses, industrial uses, irrigation, and recreation. It is estimated that the people of the United States use on the average about one thousand gallons of fresh water per person per day. With an efficient program of water usage, and with restrictions on water wastage, plus conservation and replenishment of avail-

able water resources, this average requirement probably could be reduced somewhat for the Continent as a whole, and a greater population (as pertains to this one factor) could be permitted; but, even so, the increase would be finite and limited.

When it comes to metals, the United States has already overextended itself. Imports of ore and metals on a large scale already is an imperative. We must concede, of course, that the American consumption of metals on a per capita basis is wasteful and excessive; and that, no matter what happens, the present pattern cannot go on for long. A higher efficiency in the development and use of metal resources is going to be required, regardless of the form of social order that prevails in the near future. Among other things, a much higher recovery rate of used metal must be adopted. For example, the tossing of 34 **billion** metal cans onto the garbage dumps per year can not for long be tolerated. Unnecessary use of metals, where other more available materials will serve as well, or nearly as well, must be abandoned; and the use of more abundant metals in the place of scarcer ones must be encouraged.

Even with its present relatively 'light' population load, the United States is going to require the utmost in ingenuity and careful utilization of its mineral resources, if it is to maintain a high-energy civilization. If outside sources of metals become unavailable to us, as, indeed, they are bound to, this requirement will become doubly urgent. Already, our industrialists cry out in anger whenever a piece of the earth is removed from their exclusive mineral preserve, or when the people of a distant area demand a greater share of their own minerals for their own use.

Imagine the dilemma that would confront the high-population advocates if all the people of the world should demand a per capita metal consumption rate even as high as 20 per cent that of the United States today? The theory of a Master Race and a Ruling Class would be tested with a vengeance.

We could mention many other factors that would enter into the population problem should any attempt be made to raise the average standard of living throughout the world. Recreational areas would have to be expanded on a

gigantic scale. The concept of hunting big game and catching big fish for sport would have to be drastically revised. Already, many recent dreams about pleasant automobile drives and carefree excursions in house-trailers are becoming clouded as a direct result of so many people wanting to realize those dreams. Automobiles and house-trailers are nice, provided too many of the people don't want to use them to go in the same direction, or to the same places, at the same time. Under a more efficient and socially beneficial program of planning, many more people could be accommodated in their recreational desires than is possible at this time. Further, because commercialism now rules the highways and byways, many vacations and weekends which might otherwise be joyful turn into nightmarish disappointments.

To meet the demands of more people for the 'good things' of life, a more balanced-load pattern of general operations must be instituted.

Obviously, certain parts of the earth are better suited to a heavier population density than others, especially if one thinks only of the food-producing capacity or some other one factor. But, when considering all the factors which enter into a respectably high standard of living, we find no large area capable of sustaining a huge population on a self-sustaining basis. In order to have a spot as densely populated as New York City, for example, there must be a million square miles of 'black country' to support it.

North America has more fresh water, more energy resources, and more metals than any other like area on the earth, as well as a huge expanse of arable soil in the temperate zone, yet it is beginning to suffer from symptoms of over-population, in spite of the fact that it has one of the world's lowest population densities. In order for North America to increase its population, without increasing the efficiency of its operations and reducing the wastage of its resources, the general standard of living would have to be reduced. Yet there are voluble people who (usually for sinister reasons) suggest that North American ports be opened to large-scale immigrations from Italy, West Germany, and other overcrowded areas where the domin-

ant mythology prohibits population control.

Although Technocracy Inc. may view the rest of the world with an analytical and critical eye, it concentrates its specification for a new social order to the North American Continent. Seeing no virtue in spawning human maggots under cesspool conditions, Technocracy specifies a high standard of living for the inhabitants of this Continent—a standard of **abundance** for all. Thus, Technocracy would impart to human beings a dignity and a standard of comfort and decency that no other organization attempts to approach, even in theory.

So, when Technocracy appraises the area of the Technate of North America from the standpoint of an optimum population, it takes into consideration the capacity of the Continent to sustain a standard of abundance for all of its inhabitants.

Technocracy sees no need for huge labor battalions of human toilers, hence does not go along with De Castro and others when they pose the need for human workers as an argument in favor of dense population loads. Technocracy recognizes the need for functional personnel to supervise the operation of an area, but does not view the work being done with human toil. We realize that, with the present development of technology and use of extraneous energy, only a fraction of the existing population of North America is required to operate the social mechanism and that, after the peak demands of the reconstruction period have passed, the future need will be much less.

The criterion for establishing the limits of the allowable population load for this Continent should be the physical ability of the Area to maintain that population at a standard of abundance for an indefinite period.

Descending from the above generalities, and applying statistical estimates to the problem, let us answer the question: 'How many people can the Technate area maintain at the standard which Technocracy specifies?' Considering all the known and probable factors, that number would be in the vicinity of 200 million individuals, plus or minus twenty per cent. The lowest figure in this range is the number of people that are needed to operate the Continent without imposing a heavy

load of effort upon anyone. The highest figure in this range is the number that can be maintained without placing too much of a burden upon the resources of the Continent.

It will be argued that the maximum figure in the above range is already being crowded and that it doesn't permit of any further population growth; and, therefore, it implies an immediate policy of population control. That is correct. But, remember, the physical circumstances of this Continent, not the subjective desires or impulses of Technocrats, set this range and indicate the population policy to be adopted.

How is such a policy to be administered? That is secondary; but, we can warn, that any program that relies upon voluntary human self-regulation is doomed to failure. The scientists know how it can be done. Technocracy merely proposes that the scientists of this Continent be put in charge of administering the population control policy.

Upon the installation of a Technate on the Continent of North America, one can anticipate that there will be an immediate and downward adjustment in the population, even should the prior development of chaotic internal conditions be avoided. The emigration of those people who fanatically fear and detest abundance for all, no doubt, will strain the facilities of the shipping that is available for carrying them off the Continent. Technocracy would hail their leaving as a great boon to the Continent and would do all it could to facilitate their departure.

Once the population problem of North America were resolved on a firm basis, our technically skilled and experienced administrators could offer their services, in an advisory capacity, to other continents whose population problems have been permitted to get out of hand. **—Wilton Ivie, CHQ**

★ LONDON.—Britain is building the world's first experimental atomic power station, Supply Minister Duncan Sandys announced recently in the House of Commons.

'It will produce electricity for industrial purposes,' he said, 'but it will also be able to produce the explosive plutonium to be used in the normal atomic energy program.'

Construction of the plant in northern England is expected to take two years.

—Reuters

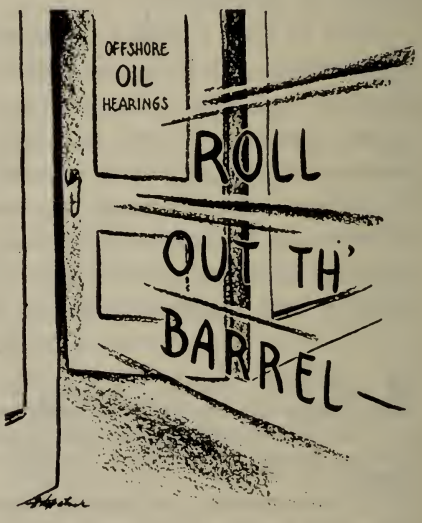
100-Billion-Dollar Grab

The vast public-utility, oil, mining, and lumber interests are getting ready to move in on America's natural resources. Their program adds up to what is probably the greatest raid on the national wealth ever attempted—a 100-billion-dollar grab.

THEY are coming in hungry, and they are not hungry for peanuts. The vast public-utility, oil, mining, and lumber interests that supported the Republican campaign are getting ready to move in on America's natural resources, and what they want is all the country has got. The new Administration is prepared to make things easy for them, and the program is beginning to be clear. It adds up to what is probably the greatest raid on the national wealth ever contemplated.

First, of course, will come the off-shore-oil grab. Barring a completely unlikely change of mind in the White House, this is as good as done. No one can hope for anything more than a brief rear-guard action against it. Next will come the grab for public power. Here the general idea is to go on building big power plants with public funds but to make sure that they are run for the benefit of the power companies rather than for the people. The third step, which is still in the formative stage, is in some ways the most appalling. It is proposed that the tremendously valuable public domain be handed over to the states for parceling out to such private interests as

First Big Deal



Fitzpatrick in The St. Louis Post-Dispatch

Reprinted from THE NATION.

can make the most lucrative use of them.

Altogether, the program represents an attempt to get back not only to the days of Herbert Hoover but all the way back to the era before Teddy Roosevelt. It is spelled out quite clearly in the record of the Senate hearings on the confirmation of Douglas Mckay as Secretary of the Interior. The Department of the Interior is the official custodian of America's publicly owned wealth. When the hungry special interests moved in after the election of Harding, this department was one of the first things they looked at. It is even more attractive to them today, for on top of everything else it now contains, in the Bureau of Reclamation, the largest single generator and transmitter of electricity in the world. In other words, the stakes are immense. The attitude of the Secretary of the Interior is vitally important.

Bear in mind that everyone who attacks the public-power program attacks it by indirection. The first target is the famous preference clause, which simply provides that the co-ops of the Rural Electrification Administration, cities, public-utility districts, and other public bodies get first rights to the purchase of power from federal dams. If the preference clause can be knocked out, if the federal government can be kept from building its own transmission lines, and if—these things having been done—the utility companies are then allowed to make long-term contracts with the agencies that sell federal electric power, the public-power facilities exist solely for the benefit of the private companies.

When he appeared before the Senate Interior Committee, Secretary McKay declared that he believes in the preference clause—'if the people want it.' But he also said that, 'private enterprise has a right to pursue their business,' that public power should not be given an advantage, and that the power companies ought not to be throttled. He thought that long-term contracts ought to be made with the power companies and that at the present time, in the Pacific Northwest, public power was getting most of the breaks.

Senator Jackson of Washington, a staunch public-power man, pressed the new Secretary: Isn't it sound policy to have power from government dams sold first to public bodies? 'Not necessarily,'

replied McKay. 'It is a sound public policy that all citizens be treated alike. . . . If that preference (clause) is in there, you are unfair to some of the people of the states, because they might want to buy from a publicly owned place and they can't.'

There is nothing mystifying about any of this if you understand the jargon. You never attack the preference clause openly; you simply say that everybody ought to get equal treatment and that private utilities ought to be free of handicaps. You agree that the government ought to build the great multi-purpose dams, but you object, as McKay did before the Senate committee, to 'the part of the federal government in imposing themselves in authority,' because you feel that the people of the state ought to have control over their own resources.

Interpreted in that way, McKay's words made his position clear. No attack in Congress on the preference clause is likely to meet a very strong counter-attack from the new Secretary of the Interior. Similarly, if a Congress pledged to sop 'wasteful expenditures' refuses to vote money for government transmission lines — and any appropriations granted in the next two years will have to get the okay of a House committee dominated by tight-fisted Representative Taber of New York— McKay is not the man to make an effective protest.

Long-term contracts for government power executed with private power companies in the absence of a preference clause and also in the absence of government transmission lines would, as Senator Jackson pointed out, 'simply dedicate the federal dams to the utilities.' And as the retiring Commissioner of Reclamation, Michael Straus, remarked, in practice such contracts would tend to become perpetual. Each one would become an inalienable right, with money invested, territory developed, markets arranged; to try to change or cancel one would be to raise a storm of protest about loss to customers, economic upheaval, and so on. All this is the more disturbing since Congress is definitely to be asked to change the preference clause and a determined fight will be made to keep the government from building any more transmission lines. In the face of these attacks it is hard to imagine a winning fight for public

power being put up by a Secretary of the Interior who talks as McKay talked before the Senate committee.

An even more serious question than that of power was raised by a remark dropped during the McKay hearings by Senator Hugh Butler of Nebraska, chairman of the Interior Committee. McKay had just said that he was 'on the side of Louisiana and Texas' in the off-shore-oil wrangle, when Butler interjected: 'I would like to say here that when the tidelands question is settled — and I hope it will be rather definitely before too far in this session — there are plans for the introduction of a bill that will make the same theory applicable to public lands now held by the federal government within the state.' This was not a complete surprise, since both the National Association of Manufacturers and the United States Chamber of Commerce have been suggesting such a step ever since the election, but it was the first indication that legislation is actually being prepared. It is worth while to take a brief look at what such a step would mean.

No one has accurately estimated the total value of what is left of the public domain—the land, the oil and minerals under the land, the lumber, the timber, the forage, and all the rest—but the best guesses made by people who are in a good position to know what they are talking about run higher than $30 billion. Some estimates run a good deal higher. Commissioner Straus recalls that not long ago the Bureau of Reclamation retained a man to make a detailed analysis of the worth of the public's possessions. The man threw up the job when his estimates got above $100 billion, saying that after appraisals got that high they became meaningless.

Anyway, this is what remains of our heritage as Americans. It is not exactly a white elephant. Even now the government earns more than $60,000,000 a year from oil and mineral royalties on properties administered by the Bureau of Land Management—only a part of the whole. But the success of the off-shore-oil grab has set a precedent, and here is the next target. Now you can see also what was really behind that often-repeated Republican complaint that the Interior Department under Ickes, Krug, and Chapman became

an unconscionable 'empire' operated by power-hungry bureaucrats. If the empire can be made to fall, the pickings are going to be very, very lush.

Secretary McKay told the Senators that as yet he had no opinion on the proposal that the public domain ought to be turned over to the states. In response to a number of questions, however, he did give a fair measure of the breadth of his views on the matter. Declaring that he had always been 'one of the states'-rights governors,' he said, 'I don't expect to change my philosophy of government because I go to work for the federal government.' He added that 'people at the local levels are better able to decide what is better for them than somebody in Washington,' and that he personally was not interested in trying to build an empire in the department he now heads. When Senator Daniel of Texas told him that he was delighted to see a good states'-rights man running the Interior Department, McKay replied, 'I hope I don't disappoint you.'

During the recent political campaign Adlai Stevenson remarked that while he had a high regard for the Republican Presidential nominee he was a good deal disturbed by the one-eyed characters with knives in their teeth who seemed to be swarming over the bulwarks behind him. Well, here they come, after off-shore oil, public power, and the whole public domain. It will take a very stout fight to repel them.

—Bruce Catton

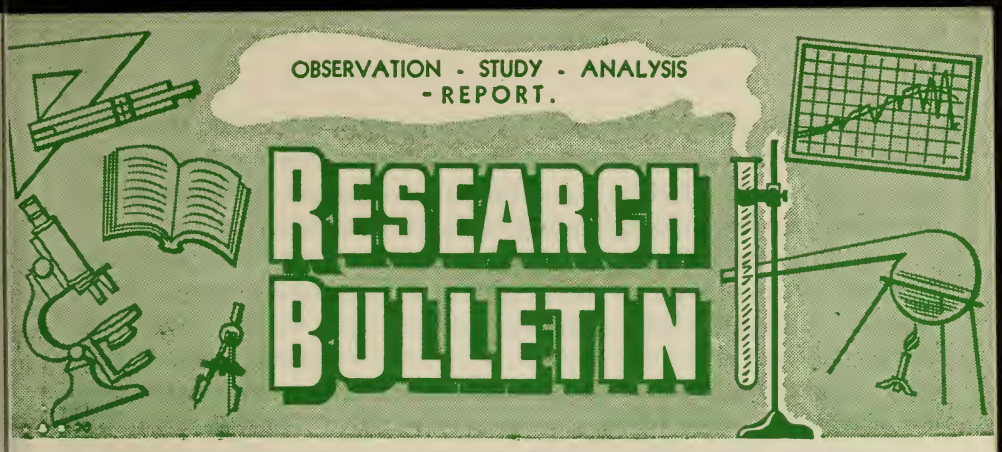
★ BIRMINGHAM, Ala.—A great new coal industry by cooking the coal where nature placed it underground was predicted here by the director of the United States Bureau of Mines, Jack J. Forbes.

He spoke to the first international conference on the underground gasification of coal numbering more than 100 American fuel scientists and 19 delegates from Britain, France, Germany, Belgium and Italy. All those countries are trying this new scientific coal recovery.

The U.S. is doing the same at Gorgas, Ala., near here, and the conference will go there to see the U.S. plant in operation.

'This Alabama plant is a forerunner of a great industry of the future,' said Forbes. 'It will make use of things which today are useless, the submarginal resources in our coal.'

Cooking is done by starting a fire in a seam. The coal products go up a chimney. Depending on how the fire is controlled, the products may be heated to run an engine, or gases that will make anything from gasoline to clothing. —*Associated Press*



MAY, 1953 *Compiled by Editorial Staff* No. 93

Technology in the Restaurant

TORONTO.—The restaurant of the future was on display recently, complete with push-button soda fountains, gravy-resistant wallpaper and coffee robots.

While the machines are doing all the work, the waitresses will be resting up in a 'waitress rejuvenator.' They won't have much to do any more, anyway, except trot around in costumes with 'appetite appeal.'

The innovations were displayed at the annual convention of the Canadian Restaurant Association, where exhibitors and 1200 food service men met to show their wares and talk over how to serve bigger and better hamburgers.

The latest gadgets just about replace the employee. A push-button coffee robot serves it either black or with cream and sugar, to take out or for the tables, and also supplies hot chocolate and hot water.

The new soda fountain practically eliminates the soda jerk. A pressurizing machine under the gleaming stainless steel fountain serves ice-cold milk shakes and drinks already mixed.

There are meat-tenderizers to take care of the steak that's too tough, and if you splash gravy on the wallpaper when you try to cut your meat, that's all right too. The new wallpaper repels all grease stains and can be washed, the man said, 25,000 times.

In the restaurant of tomorrow there'll be no excuse for a grumpy waitress, because she can whip out for a 10-minute massage in the 'waitress rejuvenator' that should make her a new woman. The manufacturers of the chair said it gives 10 minutes of gentle massage, concentrating on the feet and the back, and ought to be more popular than the traditional coffee break.

Lipstick stains will no longer plague customers when they reach for a glass of water. One manufacturer has a new chemical which when mixed into dishwater wipes away all traces of the paint.

For the uninvited guests in restaurants, there's an insect fumigator that won't let a fly or cockroach get within 50 feet.

The automatic insecticide vaporizer, first used during the last war in packed bomb shelters, is odorless and silent and harmless to humans and food, but deadly to all insects. **—British United Press**

Coal by Remote Control

CHARLESTOWN, West Virginia.—Engineers for the United States Carbide and Carbon Chemical Corporation think they have part of the answer that some day may bring an era of 'sunshine mining' when miners will not have to go underground to get coal.

They recently ran a test of their new machine that digs coal by remote control, and the results satisfied the most optimistic expectations.

The engineers cautioned that this doesn't mean the miners in the deep pits can expect to get above ground in the foreseeable future, but the system may help eliminate the most dangerous types of mines, those jutting into the sides of mountains or hills. In such mines, there is always the possibility of a mountain slide that will cave in a shaft.

The mechanical miner was inserted into an outcropping coal seam on a mountainside 20 miles from here. It began pulling out coal at the rate of nearly two tons a minute. The coal dropped onto a conveyor belt and was carried down the mountainside to a dumping area. Within eight hours, 567 tons of coal had been taken out, none of it touched by human hands.

In one week it piled up some 6000 tons, with about 65% of recovery from the seam.

At present, the mechanical ferret can reach 700 feet within the earth, but soon it will be able to reach coal at 1000 feet.

The possibility of cutting through rock and veering off the coal seam is eliminated by means of electronic eyes mounted on the cutting edge which send back beams to a control panel.

The devices, called stratascopes, are mounted on the outermost cutting teeth. In the control cab, the stratascopes are coupled to two polar oscilloscopes having circular screens resembling radar screens. Each stratascope makes a circle of light on the screen and the irregularities on the screen tell the operator what kind of stratum the machine is cutting through.

If the cutters run into rock where the seam of coal is broken, and either upthrust or downthrust, the circles take on a jagged appearance, telling the operator exactly where the coal seam ran out. Then he can maneuver the cutters upward or downward until he hits the coal again.

Different rock strata form different patterns on the oscillation screen, and since most coal strata have a nearly fixed relation to each other, there is little variation in the circle on the screen as long as the cutters are going through coal. This electronic eye also keeps the machine from drifting off course, and pulling out dirt instead of coal.

—British United Press

★ A relatively handy-sized electronic brain that can figure out your income tax or test the performance of a guided missile has been unveiled in Brooklyn.

In a lighter moment at the demonstration, the machine defeated all comers at a game of nim, which is to tic-tac-toe like chess is to checkers.

The brain is known as the 'elecom 100,' a product of the electronic computer corporation. *—Associated Press*

Magic Metal

NEW YORK.—The turbo-jet airplane engine is being steadily improved and the force of its thrust now 'is fantastic by comparison with the most optimistic expectation of 10 years ago.'

This is stated by the Westinghouse Electric Corporation, whose new turbo-jet, now qualified for quantity production and selected for some of the U.S. Navy's fast new fighter planes, is described as the most powerful in the world.

A good deal of the improvement has been due to use of the new magic metal titanium, stronger than steel but light as aluminum, in the face of enormous difficulties which have been overcome by the engineers.

'Titanium has three qualities that grip the attention,' according to the announcement. 'It weighs but two-thirds as much as ferritic materials (iron and steel) and is equally strong. It retains its strength up to about 800 degrees Fahrenheit, which is far above the limiting temperatures for aluminum. It is almost completely unaffected by salt air and water.

'But even after the knotty problem of winning the metal and its ores at a cost within bounds had been solved, problems of how to machine titanium threatened to wreck the program. Titanium cannot be cut by ordinary techniques. It smears on the tool.

'Jet-engine metallurgists found the answer partially to lie in machining the material at low temperature, created by bathing the tool and the work in a stream of evaporating carbon dioxide, 112 degrees below zero.

'The problems of using titanium alloy for jet-compression disks have been solved. Engineers now are working to reduce the cost, which still is high.

'Development work to use titanium for compression blades is well under way. Titanium for blades, in addition to its salt-air corrosion resistance, has a two-fold advantage because of its light weight for a given strength.

'One of the most important criteria of turbo-jet design is the ratio of thrust to engine weight. The lighter the engine for a given thrust, the lighter the empty airplane and the greater its pay load of fuel or armament. One of the important developments, not yet complete, is the use of hollow blades fabricated of sheet metal, instead of forged or case solid metal.' **—North American Newspaper Alliance**

Mechanize for Progress

DETROIT.—Progress toward automatic factories and mechanization were singled out here as 'the logical way to support the nation's increased production goals' in a talk at the annual meeting of the Cutting Tool Manufacturers Association by Arthur F. Vinson, assistant manager of manufacturing for the General Electric Co.

He pointed out that the electrical industry alone expects to build as much equipment in the next ten years as it has in its entire 75-year history.

Vinson said that World War II contributed greatly toward the development of automatic processes through the strides made in the field of computing mechanisms and control systems.

However, he stated, these steps were a part of the 'logical order of development' which has been going on for years in the direction of more complete mechanization. He cited these examples:

1. In 1914, the first automatic, unattended electrical substation was built and operated.

2. In 1917, the first fully automatic hydro-electrical AC generator was built and operated.

3. In 1932, a fully automatic system was installed in New York City which enabled a lone operator to control 120 electrical substations.

'These are all steps in the right direction,' he explained, 'but we still have a long way to go.' He pointed out that within the General Electric Co. no product, at the present time, is automatically packaged.

Vinson concluded: 'This method of controlling manufacture will

become increasingly attractive and those who refuse to progress, those who cling to the old methods too long, will fall by the wayside.

'On the other hand, those who progressively mechanize within the limits of their ability to support technical improvements will contribute the most toward the support of our expanding economy.'

—United Press

New Elementary Particle

WASHINGTON.—The discovery of a new elementary particle of nature, perhaps one of the most fundamental of all, has been reported to the American Physical Society.

It is the V particle, named for the V-shaped track it makes when photographed in a cloud chamber, the device commonly used by physicists to make minute elements of matter visual.

The existence of these mysterious bits of matter was first indicated in British experiments carried out in 1947, it was explained by Dr. Robert Leighton of the California Institute of Technology. The British work now has been confirmed by a California Tech research team headed by Dr. Carl D. Anderson, a Nobel prize winner.

The V particle is a particularly heavy meson. The meson is a mysterious particle that appears in the disintegration of cosmic rays and has been produced in certain atom-splitting machines. It exists in four forms and has been described as the 'cement' that h o l d s the nucleus of an atom together.

The new meson apparently is something different. The evidence gathered at California Tech is that when it splits in two, one of its parts is either a proton or a neutron, the particles that make up the atom's nucleus.

The proton and nuetron have been regarded up to now as ultimate particles, indivisible and without any insides, as it were. The heavy meson reportedly can be interpreted as evidence that either one of them has the capacity of swelling up by absorbing energy, which has

a mass equivalent of matter. In other words, they can be blown up, so they may have an internal structure of some sort.

Thus, the California Tech research, carried out under grants from the Office of Naval Research, can lead to the conclusion that these mesons represent excited, higher-than-normal energy states of the familiar nuclear particles. In this picture the excited particles, after about a tenth of a billionth of a second, emit one of the familiar types of mesons and decay to their natural state.

Although its mechanism is completely unknown, this peculiar behavior resembles, although on a more fundamental scale, that of the radioactive isotopes, widely used in medical and other scientific research. Isotopes are created out of ordinary chemical elements that absorb energy when the protons and neutrons in their nuclei are rearranged under bombardment in atomic piles. They release this energy in radioactivity when they return to a stable state.

One important phase of the research now going on at California Tech is an attempt to determine whether the decay products include not only the ordinary positively charged protons but also protons carrying a negative electric charge. If this is the case, the predicted existence of negative protons will be established.

Some extreme predictions have been made about the possibilities of negative protons. Up to now, the observation of them has been claimed only by Russian physicists. There have been implications that they might be made the basis of an extraordinarily annihilating atomic bomb.

The work, Dr. Leighton explained, necessarily is slow and tedious. Cosmic rays of sufficient energy to release the V particles are few and far between. None has yet been produced in any of the atom-smashing machines. Up to date, 16,000 cosmic-ray photographs have been studied. Only fifty-three V particles have been found.

—British United Press

★ NEW YORK.—More and more the machine is getting into poultry business. There are gadgets which pick off the feathers, debeak hens which peck each other, and sort eggs. Recently a tractor has been added which pulls a set of long revolving teeth to stir up the litter in a chicken house. *—Associated Press*

New Age in Printing

NEW YORK.—Publishers have inspected production models of a photographic type-composing machine heralded as the symbol of a new age in printing.

The new machine, photon, made by Photon, Inc., of Cambridge, Mass., was unveiled last winter when Dr. Vannevar Bush, president of the Carnegie Institution of Washington, said it was a milestone in civilization.

Bush is a director of the Graphic Arts Research Foundation, also of Cambridge, a non-profit organization founded in 1949 to advance graphic arts through the application of modern technology.

Hundreds of publishers and executives attending the 67th annual convention of the American Newspaper Publishers here inspected two machines on view.

The machine, which has a standard electric typewriter mechanism mounted on what looks like an organ console 54 inches wide, can be operated by an otherwise untrained typist.

The keyboard controls a complex electrical network. Pushbutton controls select type faces, size of type, positioning, justification and so forth. Typing errors can be corrected with simple correction keys.

William Garth, president of Photon, Inc., claims the 2,000-pound machine will revolutionize type-setting and halve the costs eliminating expensive and time-consuming composing rooms.

The machine photographs the letters from a glass matrix desk and delivers the image to photo film.

The film, 100 feet long, can be developed either as a positive or negative galley. When developed, it is ready for proofs for make-up or engraving on metal plates. **—Associated Press**

★ STOCKHOLM, Sweden.—A new robot clock for remote control of electrical circuits, said to be the first of its kind in the world to provide a choice of timings over a period of more than 24 hours, will soon be marketed by the Co-operative Union.

It will turn a switch off and on 50 times at specified hours for an entire week. *—Foreign Trade*

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

COMPLETELY AUTOMATIC ELEvator control for heavy traffic buildings is claimed by Westinghouse Electric Corporation, Pittsburgh, for its new Automatic Traffic Pattern Control. The new mechanism changes its control of elevators as the demand changes. For instance, up cars are favored in the morning and down cars at quitting time.

The new controls are designed for use with the Westinghouse Selectomatic system of operatorless elevators. No operators are needed, and no starter is required to change the controls with the changes in demand, according to the company.

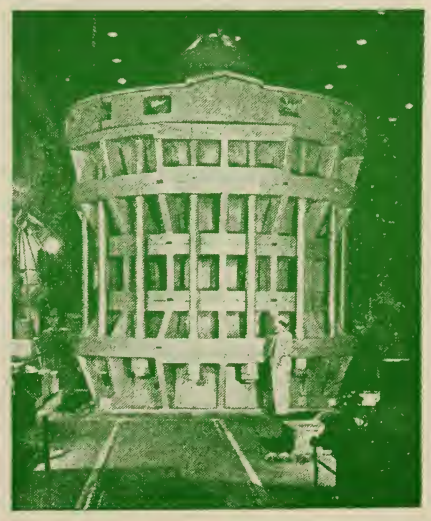
The elevator will automatically shift its operation with changes in demand regardless of how many times the load may change during the day. Up cars may be favored in the morning and after lunch. Down cars may demand faster service for the morning coffee hour and at noon as well as in the evening.

The unit, now available for general sale, has been tried under actual conditions in several installations. The first installation was the Michigan Bell Telephone Building in Detroit.

AN AUTOMATIC PROCESS FOR mounting swatches on display cards has been developed by Matherson-Selig Color Card Co., Chicago. The process can handle up to 50 swatches, cloth or plastic, simultaneously.

THIS MASSIVE STEEL STRUCTURE, said to be the world's largest primary gyratory crusher, is being used by Climax Molybdenum Co. to process molybdenum ore at the firm's new Storke Level plant high in Colorado's Rocky Mountains.

Constructed by Nordberg Manufacturing Co., the crusher stands as high as a three-story buiding. It took 12 special



heavy-duty railroad cars to ship the monster. It can crumble up to 3,000 tons an hour, depending on size of product required and material being crushed.

A MASS SPECTROMETER FOR MONitoring and controlling continuous processes in chemical plants and oil refineries has been developed by Consolidated Engineering Corporation, Pasadena, California. Accessories adapt the new instrument for use as a production-line leak detector or an analytical mass spectrometer. It will check either major constituents of a gas or for impurities.

AS AN EX-NAVY MAN CAN TELL you, chipping rust scale by hand is a slow, tedious, and much cussed job. A lot of other people have similar problems when they remove mill scale, shave ice from floors or refrigerator lines, remove old paint, or clean vats and bins.

Now G. H. Tennant Co., Minneapolis, has a machine to do the job automatically. One man working the trigger can do the work of an eight-man scraping crew, the firm says. The machine, called a Hand Revo-Tool, cleans an 8-inch path and is specially designed for rapid cleaning, concrete, brick, plaster, and other hard surfaces. Tennant claims that it is 59% cheaper than sand blasting for cleaning metal surfaces for repainting.

ANY LOAD THAT IS RAISED AND moved by hook and crane is bound to swing. Sometimes it spills; that is always a nuisance, and it can be dangerous if the load is radioactive or even just hot.

Beating that problem is a matter of highly skilled manpower. A topnotch crane operator can hold swing to a minimum. And where possible it is a good idea to have a workman walk or ride beside the load and steady it.

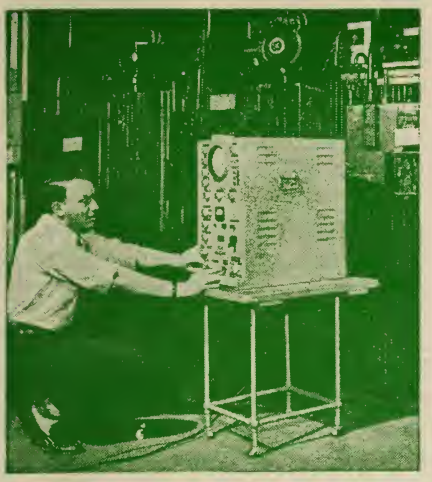
Now Argonne National Laboratory, at Chicago, Ill., has devised a crane with automatic controls that can duplicate everything the most skilled craneman can do and then some. The laboratory has left its crane in the scale-model stage, but hopes that industry will pick it up for real-life operation.

Essentially, the new crane substitutes automatic mechanism for the operator's controls. Now, all the operator has to do is turn a knob that starts the crane in the right direction. From then speed and other factors are automatically adjusted to hold down swinging.

Hoisting is controlled by a continuous variable speed drive, which gives smoother lifting than is possible for a conventional crane. A feed-back arrangement means that the lifting of the load can be brought to a smooth stop automatically.

A DROP OF RAIN STRIKING A small grid on the exterior of a building may someday automatically close your windows during a storm and open them afterward. Micro-Moisture Controls, Inc., has produced pilot models using an adaptation of the company's system for automatically closing convertible tops on automobiles.

FOR SEVERAL YEARS, RADAR HAS been spotting breaks in overhead electrical transmission lines. Now radar has gone underground, locating damage in buried cables, too.



The new unit, called radar fault locater, was developed by Commonwealth Edison Co. and Public Service Co. of Northern Illinois. It uses the same principle as military radar, except that the impulses travel over a wire instead of through the air.

When a fault develops in a line or cable, the fault locator is hooked up to one terminal. The radar impulse travels to the point of damage and returns. The elapsed time, translated into distance, shows the approximate location of the fault.

TRANSISTORS, NOW MADE FROM scarce germanium, may some day be made from an inexpensive compound of aluminum and antimony. Rectifiers have already been produced at Battelle Memorial Institute, Columbus, Ohio, with the new semi-conductor material. Scientists there claim its use in making transistors is a distinct possibility.

BENDIX AVIATION CORP. IS ENtering the industrial controls field with its new 'electronic jack - of - all - trades' known as Ultra-Viscoson. The instrument instantly and continuously measures and controls the viscosity (flowability) of liquids by ultra-high-frequency sound waves. Production will get under way at once at the company's Cincinnati division.

A STEAM JET PROCESS OF MIXing carbon black thoroughly into rubber in its liquid state has been announced by Copolymer Corp., Baton Rouge, La. The process is said to have shown in road tests a 20% improvement in road wear over control tires of the best 'cold' GR-S rubber produced by other methods.

PROTECTIVE DEVICES IN ELECtrical circuits such as circuit breakers and overload relays can now be tested swiftly and economically for performance. According to the company, periodic testing with a new instrument manufactured by Multi-Amp Corp., Harrison, N.J., will do much to prevent short circuits, motor burnouts and electrical fires.

AN AUTOMATIC FLUID TRANSmission features a tractor put out by Bready Tractor and Implement Co., Solon, Ohio. The firm says the new drive eliminates gear shifting, sudden jerky starts, and stalling. The tractor can be used for plowing, rolling lawns, hauling, operating air compressors, and as a mobile power source.

CONVEYOR TROLLEY WHEELS CAN be lubricated automatically with a new

device introduced by Alemite division of Stewart - Warner Corporation, Chicago. Ill. It delivers a preset, constant shot of either oil or lubricant to each trolley wheel on each side of the conveyor system into which it is installed.

URANIUM HUNTERS ARE NOW using a 'scintillation unit' said to be more reliable than a Geiger counter. The unit, built into a Willys station wagon, has a boom that can lower a probe into crevices and over cliffs. As the probe is withdrawn, any radioactivity is recorded and measured precisely.

DYNAMOTIVE IS A GAS-POWERED lift truck with electric transmission offered by Automatic Transportation Co., Chicago. The company claims it combines the traditional low maintenance costs and performance characteristics of straight electric trucks with the constant power service that can be derived from a gasoline engine.

ELECTRICAL CONNECTIONS WERE installed fast at the recently modernized Kaiser-Fraser plant at Dowagiac, Mich. Over 700 feet of General Electric's flexible interlocked armor cable were pulled into position in 45 minutes. Replacing old low-voltage cable, the new distribution system saves copper, also permits greater freedom in plant layout.

★ LOS ANGELES.—The dream of global television may be brought to reality by the new midget crystal amplifying devices called transistors, an industry engineer told broadcasters recently.

Neal McNaughten, manager of engineering for the National Association of Radio and Television Broadcasters, said use of transistors in cables might make it possible to transmit TV programs across water gaps too wide to be jumped by microwave radio beams.

McNaughten explained that transistors, required only a small fraction as much current as present methods, might make it possible to develop underwater cables to Europe that would bridge the water gaps and connect with microwave facilities covering land portions of the route. —*Associated Press*

★ WOOMERA, Australia.—Prime Minister Robert Menzies today launched the British Commonwealth's 'weapon of the future'—a robot jet which can 'smell out' and destroy enemy planes.

As he pressed a button, government ministers watched the slim, pilotless plane rise from its base a mile away and streak across the desert wastes of the 1,200-mile Woomera range at supersonic speed.

Officials said the plane, the Jindivik Mark I, outclasses all previous pilotless planes in speed, performance and landing gear. It compares favorably with piloted jet planes, though only half the size. The machine is the baby of Ian Fleming, one of Britain's top scientists. —*Reuters*

★ NEW YORK.—An electrically-powered automobile which its sponsors say can 'accelerate like a jet' was named as winner of the 'most unique and advanced engineering' award at the International Motor Sports Show here.

Manufactured at Saginaw, Mich., the car derives all its power from electrically produced batteries and also by a gasoline-driven generator. It has no transmission.

Must the Change Be Drastic?

Technocracy cannot give encouragement to the hopes of the gradualist. The impact of the productive technology of North America does not pose a problem that can be solved on a piecemeal, gradual or makeshift basis. The solution must be all-inclusive.

A PERSON of reasonable intelligence, when first confronted with Technocracy, realizes that its proposals merit attention, even though they may disturb his tranquility of mind to a greater or lesser extent. He is usually aware, to some degree, that there is something 'wrong' with our present social order. He is probably bewildered and disappointed by all this talk of war, but he is afraid to voice his sentiments for fear of being smeared or penalized. If he has a family and a job, or has personal ambitions, he is not free to speak his thoughts but must take into consideration what his employer, the 'loyalty' inquisitors, and the neighbors expect of him.

The intelligent North American may not understand clearly how we have business booms and inflation or business depressions and deflation, and he may feel helpless to do anything about either; but, no doubt, he hopes and intuitively feels that war is not the only answer to these economic problems. He used to have relative confidence in the economic system and in the businessmen and financiers who manipulated it. But when it and they floundered, he turned to the government and to the politicians to get things back on an even keel. Today, he is not so sure of either the system or its business leadership. He has been disillusioned again; and he has learned from sad experience not to trust anybody.

There must be some way of running the country, though, that is beneficial to its citizens, he feels. But, Technocracy! Its social objectives sound wonderful; and it appears to be intellectually compatible with the world in which we live. However, it looks like such a **big** change. Nothing seems to be sacred to the Technocrats. Mechanical efficiency appears to dominate their thinking about society. He becomes apprehensive and suspicious. He has

learned not to trust **anything**, so he is a little afraid to venture more than a step or two beyond his present milieu. Surely, he argues, we can move ahead into a saner society without giving up so much of the Old Way. Then, in order to spread the responsibility for inaction over a wider base, he asks: Isn't it too much to expect people to 'go for' something so entirely different ?

For instance, he may say, take money. The Technocrats have little respect for it. They point out, among other things, that it bears interest; and, that for it to earn interest requires that a profit be realized on its investment. This, in turn, depends on an ever-expanding economy, and that, in this finite world, is a physical impossibility. Well then, says one school of money reformers, why not just make money non-interest-bearing, and all our troubles will be over (won't they?). The replacement of money with Energy Certificates, however, need not worry the individual; for, filling out and spending an Energy Certificate will be no different, in any essential respect, than the process of writing out a check today and cashing it.

This concern about money is but one example of the limited or confused thinking that is used to approach our social problems. There are many half-baked ideas in circulation about how our society should be modified in one or more details, and each of these has its half-hearted or wholehearted adherents. Most ideas dealing with money reform neglect to take into consideration the fact that our money is negotiable and transferable. It can change hands indiscriminately. While we continue to use it, we shall be forced to cope with bribery, graft, and corruption in high and low places; and reformation campaigns will be of little avail. The economic problem of North America is such that it must be approached with something more fundamental than mere money reform.

Some people believe that tax reform would set our house in order. There are any number of organizations and societies proposing various kinds of tax reform. Technocracy would abolish taxes and taxation altogether. Other reformers favor the concept, in varying degrees, of government ownership of productive facilities. Some look to coopera-

tives; while others yearn for monthly dividends, a la Social Credit. Then, there are the perennially pious who call for a 'return' to so-called religious (usually Christian) principles. All our social problems would right themselves, they tell us, if only **all** of us would follow the Golden Rule (paraphrased by a cynic as, 'Do others good before they do you good').

Technocracy states that this Continent has all the physical requirements for providing a very high standard of living for all our citizens. There is no physical reason why North Americans should have to compete, struggle, and endure hazardous uncertainties in the process of obtaining a comfortable living. The distribution of **abundance** by means of the Energy Certificates would remove the incentive and the need for over ninety per cent of all present crime. The balance can be eliminated almost entirely by adequate health care and psychiatry. Instead of moralistic philosophizing, Technocracy uses the realistic, scientific approach of the engineer.

Taking the panoramic view, the issue is essentially one of efficiency of overall operations. Someone has suggested that a subtitle to Technocracy Incorporated might be 'The Society for the Elimination of Waste.' Certainly, if we are to sustain a high-energy civilization, we must conserve our material resources, our energy resources, and make functional use of our human abilities. In other words, we must institute a Continental program of long range utilization and conservation of our resources.

Any economic proposal that would retain for private or corporate exploitation the natural wealth of land and sea falls short of what is required. This wealth includes the various minerals, coal, oil, natural gas, forests, arable lands, domestic and wild birds and animals, fish and seafoods, hydro electric power, power from tides, chemicals from the sea, and so on. A social mechanism that devours material and energy resources at the rate ours does is highly vulnerable. Our 'lifeblood' and the flowlines through which it courses must be centrally controlled in order that the wheels of industry be kept running, and so that exigencies

can be anticipated and prepared for.

Conservation must be extended to the operational field, too. Especially where our resources are non-recurrent, their utilization must be conducted with the highest possible efficiency and recovery. Take Transportation, for example. It is well known among transportation engineers that the cheapest way — from an energy-cost standpoint—to ship bulk freight is by water. Therefore, it is imperative that the Continental waterways be extended and developed. Technocracy's Continental Hydrology program is the only design in existence for the construction and operation of an overall Waterways system for North America. It is a primary **must** for the New America — a **sine qua non,** if you will pardon the use of a defunct language. The saving in coal, oil, steel, and other materials will be indispensible to the continuation and expansion of our high-energy civilization.

The control and use of the water run-off of our lakes and rivers will provide many additional essentials to the preservation of high living standards. The water table will be raised in many regions. Precipitation will be increased over large areas. Waste lands will be reclaimed and desert areas reduced. Periodic disastrous flooding will be eliminated and our valuable topsoil will be preserved.

Without first eliminating the immense amount of waste that is incurred by excessive duplication and inefficiency of effort inherent in the present social system, it is impossible to prevent economic depression, to raise the standard of living, or to maintain for long a high level of physical welfare. The distribution of goods and services to the consumer provides a prime example. There are too many small stores and small businesses, too many delivery systems providing the same services, too much handling of merchandise from producer to fabricator, to wholesaler, to jobber, to retailer, to peddler. And too much paper work is involved in the multitudinous transactions. The establishment of a Distribution Sequence, with its Commodity Terminals, as provided in the social design of Technocracy, alone is capable of streamlining the process of distribution and reducing the social costs adequately.

A natural corollary to distribution without waste is production of goods that will endure. Today's method of turning out shoddy merchandise which is meant to wear out soon and, so, guarantee a market for future sales cannot be tolerated. Socially, it is a waste of time, energy, and materials. And where the materials involved are non-replaceable, deliberate degrading of manufactured products is nothing short of sabotage.

In order to provide for the well-being of the human components of our society, we shall have to expand to the maximum our health and educational standards, as well as our facilities for recreation and cultural achievement. We cannot do that wthout abolishing slums and building houses designed for human living.

The goals of the future, as defined by Technocracy, cannot be achieved by politics and politicians. Technocracy proposes a functional type of social administration, wherein responsibility and authority on every level of every production and service sequence will rest in the hands of those most qualified to handle them. This new type of social control will provide the opportunity for every individual to find the place within its framework where he is best fitted by training, ability, and inclination.

No, we cannot give encouragement to the hopes of the gradualist. The impact of the productive technology of North America on our ailing economic system does not pose a problem that can be solved on a piecemeal, gradual, or makeshift basis. The solution must be comprehensive, all-inclusive, and centrally-planned. There must be no weak link, like any one of the many that exist in the Free Enterprise system.

If the status quo could be maintained on a relatively stable level for an indefinite period, and sabotage, war, and political reactionism could be avoided, a policy of political and economic gradualism might make some headway in about a thousand years. But, we haven't got a thousand years, nor even a hundred. We do not have time for trial and error, for endless debate and discussion, for middle-of-the-road muddling. If not this year or next year, certainly within the next decade, we will pile dilemma upon dilemma until, finally, we shall be compel-

led to take a 'drastic' and revolutionary step.

This will have to be a step into Technocracy; it will have to be all or nothing—science or chaos. There will not be a whole wide range of alternatives to choose from—just one choice, or else.

The situation being as serious as it is, it behooves North Americans not to make compromises of expediency with the status quo. We must not emulate the poet, Ralph Waldo Emerson, in the apocryphal story of his visit to Thoreau, the author, who was in jail for refusing to pay a poll tax. Said Emerson, 'Henry, why are you there?' To which Thoreau replied, 'Why are you not here?' Do not ask your friends, 'Why are you in Technocracy?' Their only reply can be, 'Why aren't you?'

The social problem confronting the population of North America is a unique one. It demands a unique and, as it may seem to some, a 'drastic' solution. In the face of mounting disruption and confusion, Technocracy has been —still is, and always shall be— ready to show the way. Are you ready to join Technocracy, and start going in the correct direction, now? **—John Sheldon, CHQ**

★ OTTAWA.—Production of cheaper power is the key to improved living standards, Dr. G. M. Shrum of Vancouver, director of the British Columbia Research Council, said here recently.

'The problem of improving the standard of living can be reduced to a very simple one of providing more low-cost power or energy,' he said in a speech prepared for delivery in the National Research Council's science association lectures.

'Then we shall be able to water and fertilize our agriculture lands, replenish our forests, open up new low-grade mines and transport and redistribute the world's natural resources.' *—Canadian Press*

★ LOS ALAMOS, New Mexico.—The staff of the University of California's scientific laboratory at this atomic centre has developed one of the fastest cameras ever built.

For use in atomic research, the camera can photograph explosions at speeds up to 3,500,000 frames a second. That's about 150,000 times as fast as the usual picture you see at your movie theatre. *—Associated Press*

★ WASHINGTON.—The world's first known version of an atomic power plant to propel a submarine has been placed in operation, the U.S. Atomic Energy Commission announced.

The device — a working model of one that will eventually power the Navy's atomic sub, the Nautilus—was set in operation on dry land at the AEC's testing station in Arco, Idaho. *—Associated Press*

These Ignorant Foreigners

An 'ignorant' Iranian tries to understand the complexities of the American Price System. He fails to grasp why an artificial scarcity has to be created and why the people of the United States have to pay twice for butter and other products.

THE other day as I was browsing through the New York **Times** I came across a disturbing statement. A **Times** correspondent, reporting from Iran, said that 'those who have made a study of communism in Iran say that one of the reasons it is so well-entrenched is that Britain and the United States have not implanted their own ideologies here.'

As I was wondering what could be done to improve this situation, a knock sounded on my door and, by a happy coincidence, in walked my Iranian friend, Mr. Aruminian, who also had with him a copy of The **Times.**

'I have here,' he said, 'an article about the American economic system which I cannot understand. Will you not explain it so that when I return to Iran I can help implant American economic ideology in my backward country?'

Here was an opportunity made to order. I said that I should be delighted. The headline over the puzzling story:

'BUTTER GLUT POSES PROBLEM FOR REPUBLICANS

PRICE LAG FORCES U.S. TO KEEP BUYING — BENSON MUST RULE ON PARITY PERCENTAGE SOON'

'Well,' I said brightly, 'what seems to be wrong? What don't you understand? It all seems

Herblock in The Washington Post

"You Smell Something Rancid?"

Reprinted from THE PROGRESSIVE.

clear and straightforward to me.'

'Yes?' he urged me on.

'In a nutshell, the Democratic Administration had a policy of keeping farm-production prices high. Under this system the farmer sells his butter in the market, but if the price falls below what the government decides is a fair price, then the government begins to buy butter at a higher price decided on by government statisticians. Now, of course, a new Administration has come in. The new Secretary of Agriculture must decide what price level must be maintained. Quite clear, isn't it?'

'Well, no. I fear I still do not understand. Why is it necessary for the government to keep the price of butter so high?'

'Well, so that the farmers who produce the butter can get enough money from selling it to buy the things they need—things like tractors, radios, automobiles, gas and oil, and so on; and, of course, enough to pay their taxes, which are high these days.'

'What does the government do with the butter it buys?' he asked.

'The **Times** article explains that rather well. About half the butter is sold by regular marketing procedures. A lot of it is given away to worthy domestic programs like school lunches. A lot of it is given to foreign countries on some one of our foreign-aid programs. Then of course a lot of it spoils and has to be destroyed, but we expect that. Can't make omelets without breaking eggs, you know.'

'Omelets? Eggs? Were we not discussing butter? Oh, I understand. You must of course have butter to fry eggs. Does the government break eggs also?'

'Let's skip the omelet,' I said, hastily. 'Sorry I brought it up. The rest you understand. The government disposes of the butter.'

'Do the Americans whose tax money bought the butter get any of the butter?'

'No. At least if they get it, they must buy it and pay market prices.'

'So Americans who buy this butter pay for it twice? Once to the government as taxes, and once to whoever buys the butter from the government?'

'Yes, of course. And I'm sorry to say that sometimes the people who buy it from the government buy it cheap and sell it high. But naturally you understand that under our free-enterprise system

it is necessary to have some profit.'

'Oh, thank you for explaining that. I was just about to ask. Is this whole program part of the free-enterprise system we try to understand?'

'There's some debate about that. The Republicans call the part of the program where the government buys the butter with tax funds "creeping socialism." But the part where the government sells to commercial markets, and the people buy it from these markets — that's free enterprise. I'm not sure I've ever heard this threshed out, but I suppose that the part of the program where the government gives butter away so as not to compete with private enterprise is an integration of creeping socialism with free enterprise.'

'I think I understand. Your economic system is managed by the government. Its purpose is to try to give everybody a profit so that everybody can buy everything he wants and also pay high taxes so the government can give everybody an income high enough to buy whatever he wants and also pay high taxes. Very ingenious. I shall tell my fellow countrymen of this method.'

'Well, no,' I cried. "Don't tell them **that.** We Americans don't approve of government-managed economic systems. At least we don't approve of **other** governments having government-managed economic systems.'

'Yes, I see. I believe I see. But might I ask you another question about this butter situation? It says here—in The **Times** article—that last year Americans ate only half as much butter as they ate back in 1935-39. Why is that? It is not because your farmers are not producing enough butter, because The **Times** also says that if the government keeps on buying butter at the current rate, by the end of March the government may have 100 million pounds of butter in storage. Why don't the American people buy and eat that butter?'

'The chief reason is that butter has become so expensive that restaurants are stingy about serving it; and many people buy cheaper butter substitutes.'

'Yes, but Americans also **are** buying butter. They are buying millions of pounds of butter. It says here American taxpayers

bought 20 million pounds of butter in the first twenty days of January.'

'Yes, of course, but we did not buy this butter to **eat.** We bought it to help support our farmers.'

'Ah, now I see. You Americans have evolved a very advanced sort of economic theory. You do not produce simply for use. Nor do you produce in order to gain a profit from having produced something useful. You produce primarily for profit — that is, to keep people employed, and whether what you produce is used or destroyed doesn't matter.'

'We still eat a lot of butter. Besides, many Americans would rather eat a cheap substitute and save up toward a TV set.'

'I am afraid your system is too advanced for my backward country. We do not have a choice between TV sets and butter. My people cannot even buy enough food to eat. They could not afford to pay for food they did not eat just to help support our farmers. Our problems seem very different from yours. If I understand it, your system is to create an artificial scarcity by taking butter out of the market, so that the price is always high. We have a real scarcity of everything, and our problem is how to produce more and how to get enough foreign exchange so that we can buy abroad the necessary things we cannot produce.'

'But . . .'

'Your American system seems too wasteful for us. Even for yourselves this butter system seems extravagant. You are buying millions of pounds of butter you don't eat. Yet since today you are eating only half as much as, say, fifteen years ago, it can be supposed that if the price were lower you would once more buy it to **eat.** So why doesn't the government sell the butter it buys directly to the people at a fixed low price? Then the total cost of butter to the people would be cheaper than now, and the butter would be eaten.'

'The former Secretary of Agriculture, Mr. Brannan, I believe, tried to work out some modification of such a plan but it was rejected as too much like socialism. It would interfere with the free market.'

'I see. Well, since you don't like government interference, why not let butter take its chance in the free market? Let the price drop

until people will use it generously again?'

'Well, the Republicans thought of doing that, but they changed their minds. Can't disappoint the farmers, or annoy the margarine interests. Politics, you know.'

Mr. Aruminian thanked me and departed, carrying his New York **Times** with him. I was beginning to understand why the Voice of America has so much trouble trying to implant our economic ideology abroad. These foreigners are nice people, but they need a lot of guidance and education before they will be able to understand our American system.

—Helen Mears

★ WASHINGTON.—The United States is heading toward a showdown on its farm-aid program. The weather may exert more influence on deciding the issue than politicians or farm leaders.

The present farm program is running into trouble. Encouraged by favorable government price guarantees, farmers are producing more than can be sold. Foreign markets for farm products are falling off because buyers can get supplies cheaper elsewhere. The unsold portion of farm production is being acquired by the agriculture department to carry out price promises.

If weather conditions are favorable this year, farm output would be the largest on record. The government would have to take over the extra supplies and add them to an already heavy stockpile.

The public would witness losses through spoilage, dumping abroad and diversion of foods into non-food uses.

The agriculture department is already getting evidence of public dissatisfaction with the situation. Recent heavy government buying of butter to support prices has brought criticism. *—Associated Press*

★ PARIS.—The world's first big-scale attempt to capture solar energy for industrial use is being started this month at Abidjan, on the French Ivory Coast of Africa.

With help from the state scientific research bureau, a company is building two powerhouses where turbines will be kept running by using vapor from un-heated tropical sea water.

It has taken two years to build the equipment at a cost of $5,600,000. Experiments at Brest, it is claimed, already have shown the prospects of success to be good. *—NANA-Kemnews*

★ CAPETOWN, South Africa.—F. H. Wortley, South African engineer, has invented an all-seed planter which will work, he says, at 12 miles an hour, the normal speed of a tractor, instead of the usual 2½ miles an hour for planters. *—British United Press*

★ LONDON.—British aircraft constructors have announced an additional refinement to the ejector seat—a tiny gadget that automatically brings the pilot safely to earth even if he has lost consciousness. *—Associated Press*

Selling an Abundance

Salesmen are running into trouble trying to sell an abundance. The Technocrats are telling North Americans that it cannot be sold, but it can be distributed for the welfare of all. We urge you, as a citizen of this Continent, to investigate further.

TODAY is an age of specialization; we have personnel who make one phase of operation their particular field of endeavour and they stay within it. To encroach upon what is considered another man's activity would be unethical and often contrary to law. This has come about because of the complexity of our method of operation. Our society and the physical processes of production and distribution have become so technical that it is beyond one person's ability to understand and cope with the whole array.

So we have specialists, such as engineers who deal only with radio, with one phase of automobile mechanics, or aerodynamics. In the field of medicine too we have our specialists, and the old practitioner who had a smattering of the whole anatomy is gone with the horse and buggy he used for transportation. Instead, a doctor concentrates on one group of organs or glands, with diet or the nervous system.

Now a new line of specialty has grown up, and it is one of the most respected, and usually one of the highest paid of the trades. That it does not contribute toward the operation or maintenance of any part of our productive mechanism is not surprising in this day and society of useless activities. This new line is the art of salesmanship, and it is organized with a definite end result in mind. Salesmanship of course came about in a certain way, and at one time in our history did fill a certain need. It could be said in fact that in the earlier stages of our social development it supplied a service.

For, when our country was emerging from an almost uncivilized state, where settlements huddled around a lake, along a river which supplied transportation, or in some fertile valley watered by mountain streams, means of getting information from one part to another was slow and uncertain.

Our productive processes were increasing, new products were constantly being devised, and old ones improving. There was a ready market in the rapidly expanding west for the things which the eastern factories were turning out. Because of the distance and lack of adequate means of communication it was often found that a commodity which could be of invaluable service if placed in the right hands, was unknown and therefore unused. That is where the salesman came in, and they traveled across the Continent in-

Lichty, Chicago *Sun-Times*

"Getting the kiddies to ask Mother to buy it isn't enough. We gotta get 'em to scream, bite and kick until Mother buys it."

troducing firsthand the products for use. Through their familiarity with a certain line they were able to help the homesteader, trapper or r a n c h e r to understand the method of use, and often opened up a new life for him. The salesman from the far city was awaited with anticipation and pleasure; he was sure to h a v e something different to fire the imagination and create a demand for more, as one person's desire for ownership was born from looking upon the latest gadget of a neighbor. It was a lucrative business, selling in a ready market, for those with the required payment were anxious to possess the desirable g o o d s. With a percentage of the selling price as his share, the salesman increased his earnings y e a r by year as the production increased.

As our ability to produce boomed because of the ever mounting use of energy from petroleum, coal and running water there w e r e more and more products to present to the populace, and as a result the demand for salesmen increased. Before many years they were s e a r c h i n g out the homesteader in his lonely cabin a n d even waylaying the trapper when he hit town to obtain supplies. The production of goods was outrunning the increase in population, and especially the increase in available money.

By 1929 our production was so tremendous it caused our economy to waver and the resultant years of depression were hard on the salesman as well as factory worker, farmer and clerk. Still, the necessary and desirable consumer goods were being produced, and when a dollar could be had it went toward something or other a salesman offered. He took his cut, and so made a living, usually better than the one enjoyed by those who actually produced the things of use. Obviously the people wished to enjoy the high standard of living our technology produced in the way of radios, washing machines, 'fridges' and automobiles, and were b e c o m i n g more and more accustomed to them. They u n d e r s t o o d them and wanted them; a salesman could tell about their desired features, but he was powerless to show a way of bridging the gap between production and distribution.

The war years brought a change of course, and the picture was altered. As shortages in consumer goods coupled to an increase in

available purchasing power brought about more demand, the salesman had a relatively easy time. In fact, in many cases it was his problem to talk a client into reducing his order and accepting substitutes. At the same time, because more people were moving around and seeing, possibly for the first time, the luxury of living in a 20th century world their desire for this advantageous way of living increased also, and they thought, 'That's for me'. They firmly made up their minds that, come peace and 'normal' times, they would enjoy all the fine things of life which they felt they had earned, and which would be available. Because our means of production had increased so tremendously under the pressure of war demand, and because the scientist and engineer, given the funds in a war economy, had developed so many superior articles and techniques, the postwar world on the North American Continent appeared in the mind's eye, a land of plenty and pleasure.

Came the dawn of peace, and after several years of stalling private enterprise finally moved back to a peacetime production basis. Then came the economic nightmare which they had all the time been dreading! Production, large before the war, was much greater and grander. So the demand for salesmen was at an all-time high, and they had more products with which to entice the consuming public.

The salesman today, faced with an abundance of all consumer goods, heavy durable goods as well as the everyday line of staples, is in an entirely different category than his earlier prototype. For, because of the cohesiveness of our society, there are no remote settlements out of touch with the industrial centers. Because of radio, press, theatres and television, as well as all types of fast transportation, we are perfectly familiar with what is going on at all times. A new product does not stay unknown or untried for long. It is hardly on the market but its merits are under fire, and by actual test they are proved or disproved. There is no rapidly expanding markets, so of necessity the increasing host of salesmen must compete for the same customers. What one gains another loses, and it is dog-eat-dog at its highest pitch.

At the same time, because the

newer methods of producing depends on more automaticity and therefore fewer man-hours, those displaced are forced into another field. Salesmanship seems the only expanding line, and it is becoming overcrowded. Each salesman must have one line of goods, or several preferably, in order to reach a wider clientele, and goods are produced, not so much from the standpoint of filling a need, but rather to appeal to a gullible public which has become conditioned to accept and even demand frills, fancy geegaws and gadgets to clutter up a life which is becoming more and more complicated and confusing.

People are confused today, not because there is no adequate means of informing them, but because there is in effect a deliberate campaign designed to keep them in ignorance and cause them to believe that that which is good for the maintenance of business operations is working to their advantage. No small part of the propaganda campaign is the array of advertising which bombards them constantly from the radio and press. The salesman, whether he is on the radio, in the department store or the one you meet when you answer a ring on the doorbell, has his own brand of propaganda, designed to convince you you cannot live without his product, and that it is superior to that of his competitor. It matter not that the competitor's product may be identical.

What brings about the unusual and expanded accentuation of salesmanship is the fact that our method of producing goods and services is out of adjustment with the social operations. For, using the scientific method, and having on this Continent a tremendous array of natural resources as well as sources of power to turn the engines, we are at last in an era of abundance. We do not enjoy it, only because we have not as yet learned how to manage it. Selling a scarcity was relatively easy, but we cannot sell an abundance to anyone. The reason being that to sell, a product must command a price, and when it is in abundant supply the price is deflated, until, if that product becomes abundant enough the price will disappear entirely. The only solution the Price System can conceive of is to put more salesmen in the field, and then with more enticing and eloquent advertising persuade the

sucker, which is the average North American, to spend the little income he has, and to mortgage his future income so that the things our factories turn out will not remain in the warehouses and so by their very presence depress prices. Once they are forced to start a downward trend on prices they are finished, and they know it.

Another feature, well planned, and an important part of the strategy is deliberately incorporating shoddiness into the product, for something that lasts for any appreciable length of time is bad business. It means that once a customer is sold he ceases to be a customer until that article is worn out or out of style. So that if articles of short life expectancy or designs that do not remain in style can be turned out the customer can be resold at frequent intervals. Strange as it may sound to anyone who has not had experience as a salesman, what exasperates the most is a customer telling him trip after trip that the article he sold is still in good working order and a new one won't be needed for some time. The only reason quality is considered at all is so that the product will have an advantage over a competing line. If the salesman can talk the customer into believing that he is getting better service from his line even though the product doesn't last as long as a competitor's, he is a good salesman, and is being successful. The welfare of the customer is of no concern to the salesman.

In making an analysis of the mode of operation in practice today Technocracy makes it quite clear that we do not attempt to heap blame on any individual or group. Hence it is not the salesman, the manufacturer or wholesaler at which we are pointing the finger. We merely use this as an illustration of the inconsistencies and inadequacies of the Price System when faced with an abundance, as it is on the North American Continent today. For we are all victims of the system and conditions, and as long as we insist on maintaining it we will have to submit to the confusion and discomfort it causes. A salesman must make a living somehow, and if he has been forced into the racket because his former means of employment was done away with by a machine, he simply pursues it to the best of his ability.

There is an alternative, however, and it is just a matter of the citizens becoming disgusted enough with things as they are so they will do something about making a change. The alternative is a blueprinted method of dealing with an abundance as presented by Technocracy Inc. In such a society there would be no need for salesmen, for it wouldn't be a case of trying to get rid of production, but rather of making it available for all citizens. Instead of trying to 'convince' the public that something or other was necessary, superior or beneficial, we would only need to conduct a public information service. Through that method the citizens at all times would be presented with unemotional and undistorted information as to what was available, what it would do for them and how it was to be used. When an improvement was effected they would be advised, and as only one brand, 'The Best,' would be produced, there woulud be no hucksters trying to persuade them to use one instead of another.

The salesmen have run into trouble trying to sell an abundance. The Technocrats are telling North Americans that it cannot be sold, but it can be distributed for the welfare of all. We urge you, as a citizen of this Continent to investigate further. The Technocrats are ready with the information. Are you ready with a receptive mind, or are you going to fall for another bill of goods? **—Ed Broderick**

★ BOSTON, Mass.—The man of tomorrow will sleep soundly on a 'chillow' in summer heat.

This and many other new gimmicks to make living more comfortable were on display here recently.

The exhibition, titled 'Products With a Future,' was put on by American Research and Development Corp., which offers financial and engineering assistance to industrial idea-men.

Displayed for the first time was the 'chillow.' It was a plastic pad produced by Jet-Heet, Inc., of Englewood, N.J.

The tired user places it under his pillow case, plugs it in a wall socket and lets a tiny electric pump on the floor circulate cool water through tiny veins. Good for hot nights, says the producer. Not bad for the morning after a big night, either.
—British United Press

★ LA PAZ, Bolivia.—A scientific mission made up of U.S. technicians and Bolivian army officers has announced the discovery of radioactive minerals in the province of Nuflo de Havez, in the department of Santa Cruz (eastern Bolivia). *—Reuters*

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the member to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska, Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Technocracy is the most forceful and dramatic proposal for economic planning that has ever arisen in the United States.

—Prof. John W. McConnell of New York University

TECHNOCRACY DIGEST

AUG. 53

A Message to American Catholics

Book Burning Suggestions

"Water--Or Your Life"

Technology Takes Over the Farm

First Propane Gas Locomotive

Danger Signals

Push-Button Age

Betrayal at Hell's Canyon

No. 149

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

AUGUST, 1953 **No. 149**

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The Quarterly Survey

Peace—Then What?

With a truce in Korea, the entire climate of the North American economy will change. Under peacetime conditions this Continent will head toward depression.

First and foremost, the truce will cut back military expenditure. For example, the United States last year spent over $2,000,000,000 for military gasoline and ammunition in Korea alone. When these expenditures and others are no longer necessary, it is expected that the U.S. military budget will be reduced about $13,000,000,000 by the middle of next year.

The second big factor in the post-Korean economy is the probability of a decrease in the $27,000,000,000 annually that American business is now spending on improvement and expansion.

U.S. business inventories are at record highs—$76,000,000,000—and these, too, will be slashed as slack appears in the economy.

Another factor to watch is the high level of installment debt, which, today at $19,700,000,000 stands at 8% of U.S. personal income after taxes. This form of debt has increased by about 3½ times since 1945. And on this increase the automobile and household appliance industries have ridden to unprecedented volume.

The coming of peace will bring a flood of economic problems which the Price System is incapable of solving. Only Technocracy has the design for a social system which will allow the citizens of North America to enjoy security and abundance without war.

'Cuckoo-oo'

Burck in The Chicago Sun-Times

Fear on Auto Row

About 9,000,000 Americans, directly or indirectly employed in the production, sales and servicing of motor vehicles, are beginning to worry about their jobs these days. The concern is greater in Michigan than elsewhere because the major portion of the state's economy is geared to automobile production. Detroit, particularly, has been marked by history as the place where depressions first are bred.

Defence production funnelling into the area in the past several years has kept employment at a peak. But recent cancellations of contracts, such as for air force planes at Kaiser Motors Corp., and cutbacks in army tank and truck procurements, are bound to hurt. Aside from defence curtailments, civilian auto and truck production is expected to reach its peak this month and then begin to taper off for the inevitable model changeover period this fall and winter.

Observers have been predicting for some time that this may be the last year in the postwar period when the U.S. economy will be able to absorb as many as 6,000,000 new automobiles. The publication **Business Week** in a recent issue said that 'in the world that Detroit sees, the used car business has already collapsed and the new-car market is reaching saturation.'

The picture along Detroit's famed Livernois 'Auto Row' supports this pessimism. Used car lots are jammed and new car dealers can't find space for their accumulating inventories. Discounts ranging from 10 to 20% are being offered on many new cars, excepting the more popular models.

Problem of Plenty

Never before have wheat stocks, actual and in sight, reached such peaks in North America. In farmers' bins alone in Canada we have left over from last fall's bumper harvest almost as much wheat as we produce in a light year. In addition, commercial storage is jammed and a new crop will be ready for harvest in a few weeks.

Across the line in the United States, it is the same story, only more so. When this year's bumper crop is in, the total supply is expected to be 17 billion bushels, the greatest on record, enough to fill a train of grain cars extending from the U.S. to Pakistan.

The problem of surpluses is becoming general in the agricultural field. In the case of butter, the U.S. Commodity Credit Corporation under its current buying program has now purchased more than 270 million pounds, equivalent to nearly 22% of the 1952 creamery butter output. To reduce C.C.C. stocks, donations of 74 million pounds to charitable institutions and to school lunch programs have been approved, and 50 million pounds have been earmarked for sale to the armed forces at 15 cents a pound.

Comment on the situation by Price System magazines and newspapers clearly reveals that proponents of the present system are baffled by the paradox of plenty and price. On every hand we see products being taken off the market through taxpayers' money so that the consumer (who is the same person as the taxpayer) can pay a higher price for commodities at the store.

Technocracy cannot help wondering how long the citizens of this Continent are going to tolerate a social system which makes them pay to keep prices higher for themselves and which even destroys the goods while human beings are in want.—**The Editor**

★ CHICAGO.—The U.S. has so much wheat this year that nobody knows what to do with it.

This factor has depressed prices in an already weak wheat market, just at the time when the farmers are reaping the harvest.

The harvest is under way in the southwestern winter wheat states and will be moving into the mid-west soon. The flood of grain has been hitting the elevators all at once. Some of these elevators already were nearly full of wheat from last year's harvest.

Many Oklahoma and Kansas farmers whose bins are filled have been piling their wheat on the ground. Some have been pouring it on the concrete floors of their barns.

The government has taken emergency measures in an effort to cope with the situation. It is seeking to increase its storage capacity and also will grant emergency price support loans to farmers in the southwest who have to pile their wheat on the ground.

—*Associated Press*

★ NEW YORK.—An impending revolution in freight transportation methods in the United States may be as spectacular as the railroads' shift from steam to diesel-electric motive power.

The changes are expected to put many heavily loaded truck trailers off the highways and onto railroad flat cars.

Research studies now being disclosed indicate the railroads can haul the trailers as speedily, more dependably and at less cost a mile than the intercity truckers.

—*Associated Press*

A Message to American Catholics

The dominant ideological conflict in the world today is that between Roman Catholic fascism and Russian communism. Technocracy objects to the Continent of North America being used as a battleground for the waging of that conflict. Where do you stand?

IN response to requests from a number of Roman Catholics and others who are Members and friends of Technocracy, we are issuing the following statement of policy in an effort to clarify Technocracy's position with respect to the Roman Catholic Church and particularly with respect to its members and affiliates on the North American Continent. This same policy applies to all other church and fraternal groups which operate on this Continent. Technocracy does not single out the Roman Catholic Church or its members for special treatment; rather, its policy and attitude toward any religious or other organization whose objectives and procedures parallel those of the Roman Catholic hierarchy are the same. Special reference is herewith made to Roman Catholicism merely because it has been most conspicuously in the forefront of those who criticize and oppose Technocracy.

There are many members of the Roman Catholic Church on the North American Continent and they must be accepted as, and must become a part of, any social future of this Continent. Technocracy Inc. accepts members of the Roman Catholic Faith into its Membership, the same as it accepts members of any other organized Faith.

Technocracy recognizes that the field of Faith is outside of the scope of the physical operations on this Continent; hence, it is outside of the field of Technocracy. Technocracy is not a religion and it does not seek to invade the realm of religion. It deals only with the physical problems of the society, leaving the spiritual realm to the unfettered quests of the individual and group seekers after The Good Life. If North American citizens choose to seek for the Good Life within the structure of the Roman Catholic Faith, that is their right and privilege. It is

also their responsibility to reconcile their Faith with the physical welfare of this Continent's population and to refrain from any attempts to dominate or manipulate either the spiritual and intellectual life of others or the physical operations of the Continent.

With respect to the knowledge of the universe and the details of physical nature, Technocracy follows the lead of science, both in attitude and conclusions. Where knowledge is not conclusive, Technocracy (like science) holds its conclusions in abeyance. Whenever any individual or group offers an explanation for physical phenomena, either as a matter of belief or opinion, which is in variance with the established knowledge of science, Technocracy reserves the right to be critical of that explanation and to refer to it as a 'superstition,' regardless of its venerableness or the body of authoritative dogma that supports it. Technocracy does not compromise with error, either as a matter of diplomacy or expediency. Any Faith, private or collective, that is in harmony with the knowledge of science is in harmony with Technocracy. Conversely, any Faith that is in opposition to the conclusions of science will likely find itself out of harmony with Technocracy.

Technocracy takes the position that no man has the right, intellectually, to decide something as a matter of belief or opinion which can be determined as a matter of fact. But, where facts are not available or are inconclusive, belief and opinion may be permitted to operate—either as tentative expediencies or for subjective satisfactions.

Within the physical realm, Technocracy considers the needs and desires of Roman Catholics to be the same as those of all other people, subject only to physical and subjective variations among individuals. All people need and desire adequate and healthful food; all people want suitable and satisfying clothes; all people want dwellings that satisfy their needs for shelter and other details of living; all people require recreation of some sort and rest; they also need transportation, communication, education, and health services. With respect to the physical factors of life, Technocracy holds that all citizens of North America are entitled to the best

that the Continent can afford and produce, Roman Catholics no less than any other citizens.

Technocracy, as a social movement for all citizens of the North American Continent, seeks to establish a condition of abundance, security, and freedom from toil, with an optimum of health and educational standards, for all people residing here. Those who are in accord with these objectives are welcome to affiliate with and support Technocracy. Those who take exception to Technocracy thereby place themselves, prima facie, in opposition to the above social objectives and on the side of scarcity, insecurity, toil, disease, and ignorance; at least, the burden of proving otherwise rests with them. If you oppose Technocracy on this issue, we are proud to have you as an enemy and welcome your renunciation of our Organization.

In the field of Faith, Technocracy does not seek to distinguish among any of the isms, be they Roman Catholicism, Orthodox Catholicism, Protestantism, Judaism, Mohammedanism, Hinduism, Buddhism, Shintoism, 'Mormonism,' Mysticism, Paganism or Atheism. Technocracy does not declare that one of them is any better or any worse than any other It leaves the problem of favoritism and discrimination among them to the individual citizens of this Continent. On the positive side, Technocracy supports the privilege of any organized religious or philosophical group to assemble and worship or commune together without interference. Technocracy's only requirement is that they **not** conspire to interfere with the like privileges of other groups or to dominate or interfere with the physical processes of the society—including education, public health, public welfare, public information, recreation and entertainment, provision of goods and services, social service, internal security, Continental defence, law, or government.

Technocracy is non-religious (**not** anti-religious), but it is anti-clerical. It takes the position that Christ is reported to have taken when asked for a certain decision: "Render therefore unto Caesar the things which are Caesar's and unto God the things that are God's." Religion's field is that of preparing the individual for the Good Life. Religions are subject to variation as they differ in their

definitions of the Good Life. Technocracy has no definition of the Good Life to offer — that is not Technocracy's field or responsibility. On the other hand, Technocracy is vigorously opposed to any religious or fraternal group seeking to dominate the physical functions of the society or to specify the behavior and living circumstances of the citizens in general and, particularly, those outside of its specific membership.

We do not mean to imply that religious leaders should refrain from examining the operations of the society and of individuals and groups within the society in the light of their concept of the Good Life; nor do we suggest that they refrain from making a critical analysis or offering a positive synthesis. Rather, we urge that religious leaders take a dynamic part in the field of social critique. Theirs should be a position of study, analysis, and advice in an ex-officio capacity, above and outside of the social administration.

Technocracy is opposed to any any clerical or theocratic state on this Continent, contending that the administration of the social affairs of North America is the concern of all the people, not the domain of any minority group, religious or otherwise, either in the capacity of an exclusive monopoly or as a censorship interferference. For example, if the Roman Catholic hierarchy wants to maintain an Index of 'forbidden' books for its membership, it may be acting within its proper field; but, if the Church forcibly attempts to influence the use of those books in the schools and public libraries or interfere with their distribution to the general public, it is definitely exceeding its privileges and violating its franchise. The Church may have the right to select the books for its own libraries and to burn those books which it fully owns if it finds them objectionable; but it has no right, directly or through political stooges, to censor books, magazines, or newspapers published for general circulation.

When an international clerical organization, such as the Roman Catholic Church, proposes to set itself up as a supra-government with world-wide aspirations, above all national governments and responsible 'only to God,' it places its members in the position of dual allegiance—one allegiance to

the theocratic world government and one to the country of their respective citizenships. These two allegiances are bound to be in frequent conflict and to place the member in the position of having to choose between two loyalties. When the head of the church is also the head of a political state, this dual allegiance particularly places the officials and hierarchy of the church who reside in other countries in the position of being agents of a foreign power. Thus, it becomes evident, the members of the hierarchy of the Roman Catholic Church on the North American Continent are agents of a foreign political state—the Vatican—and, on the basis of official statements of the Church leaders, their first allegiance is to that foreign power.

In the realm of religion, strictly as such, international organizations, uniting in a common quest those who are in agreement on the definition of a Good Life and on the means for seeking it, may be permissible. However, in the realm of governance, which deals primarily with the physical operations of an area, a supra-governing agency, international in scope and receiving its directions from a foreign power, cannot be accepted. It follows, further, that any citizen of North America who collaborates with such a foreign power in its efforts to dominate the secular affairs of this Continent becomes an agent of that foreign power and his loyalty to the country of his citizenship is suspect.

This position of Technocracy does not apply only to the Roman Catholic Church but to any and all international ecclesiastical organizations whose objectives on this Continent and other circumstances parallel those of the Roman Catholic hierarchy. For example, should Israel set itself up as a Jewish theocratic state, the members of the Jewish Faith on this Continent would be in the same position of dual allegiance as the Roman Catholics. If there were prominent organizations of Mohammedans, Shintoists, or Lamistic Buddhists on this Continent, Technocracy would have to view them in the same light. Special mention is made here of the Roman Catholic Church merely because it is the one world-aspiring theocracy which is most prominent and most aggressive on this Continent.

The Roman Catholic hierarchy has been conspicuously guilty of attempting to infiltrate into the secular affairs of North America —of using pressure tactics to influence governmental legislation, health services, educational specifications, public information, entertainment, labor union policy, and national foreign policy. Technocracy takes the position that no church or fraternal organization (including veterans organizations) has such privilege on this Continent. This is the field of government, not religion. Technocracy stands for a strict separation of church and state — much more strict than that which is now being observed.

It is observable that in countries where the Roman Catholic Church has gained a virtual monopoly in the religious field, the Church hierarchy has tended to take over and strongly dominate the secular affairs of those countries. We need mention only Latin America, Spain, Portugal, Italy, and Eire as examples. In countries where the Roman Catholics are a minority, as in the United States, Canada, and Britain, the goal appears to be no different, although result is fascism. In Europe, the the power and influence of the hierarchy is relatively less.

Wherever a church hierarchy enters into a tri-partite governing head with the political and economic oligarchies of an area, the Vatican and the Roman Catholic hierarchy in general have consistently fostered and supported fascism. The fascisms of Europe prior to, during, and following World War II — Germany, Italy, Spain, Portugal, Vichy France, Slovakia, Croatia, etc.—were all Roman Catholic fascisms. (In a similar way Saudi - Arabia and Pakistan are Mohammedan fascisms, while Japan and Tibet are—or at least were — Shinto and Lamistic fascisms respectively.)

The utmost in cruelty and tyranny which has characterized the fascisms of Europe, directed against the heretics of Roman Catholicism, has not only been condoned, defended, and supported by the Roman Catholic Church hierarchy but has often been instigated by it. Technocracy is firmly opposed to the importation and institution of European Catholic fascism on the Continent of North America. In fact, we resent the footholds of Catholic fascism

already rooted here; notably, those of French Canadian Quebec and Latin America, as well as the Italian, Spanish, and Irish Catholic fascist blocs in certain of the large cities of the United States.

Fascism is the last ditch stand of the old order of scarcity, human toil, ignorance, superstition, and tyranny of the few over the many. We regret that the spokesmen of a major church organization on this Continent should speak of peace, human dignity, and the brotherhood of man out of one side of their mouths while they scream for war, hate, and human persecution out of the other side. For example, when a loud-mouthed, scurrilous stooge like Joseph McCarthy is placed out in front as a voice for Roman Catholic fascism, it is high time that the objectives of the Church hierarchy were being carefully scrutinized.

The major strategic objectives of the Roman Catholic Church have been listed as: (1) Destruction of the Soviet Union; (2) winning the United States of America; and (3) Catholization of the whole world. In the attainment of these objectives, the Church hierarchy has sought and to a large degree attained the support of the American political parties, the labor union leadership, veterans organizations, and American big business. The principal techniques have been infiltration, financial manipulation, intimidation, and the threat or promise of a large bloc of political votes.

The switch of a few million Roman Catholic votes from the Democratic Party to the Republican Party in certain strategic localities of the United States in the 1952 national election demonstrated that the Church holds the balance of political power in the nation as well as in many states. The effectiveness and subtlety of this power was further demonstrated with amazing conclusiveness in specific localities where selected candidates of Roman Catholic persuasion—some from the Republican Party and some from the Democratic Party on the same ballot —were elected into office.

The dominant ideological conflict in the world today is that between Roman Catholic fascism and Russian communism. Technocracy objects to the Continent of North America being used as a battleground for the waging of that conflict. We object to Am-

erica being pushed into foreign wars to fight the battles of Roman Catholic fascism against the supporters of Russian communism and any reasonable or slight facsimile thereof.

The 'side-show' in Korea has been mainly a battle between these two ideologies; and the 'gain' to this Continent certainly has not been worth the cost. If the Roman Catholic hierarchy and its stooges seek to involve the United States and Canada in other 'Koreas' around the world as steps in the attainment of the strategic goals of the Vatican, we hold, it certainly is not in the best interest of the citizens of North America.

In this ideological war, the Roman Catholic inspired propaganda on this Continent has reached the point where it recognizes only partisans in this world dispute. In effect the propaganda states: 'If you are not a Roman Catholic you are a communist.' The recent charges by one of Joseph McCarthy's sub-stooges that the Protestant clergy constituted the greatest stronghold of communism in the United States is only one dart in this propaganda barrage.

It is not without significance that most of the judges, prosecutors, 'witnesses,' and accusers of the victims in the recent and current 'disloyalty' trials are Roman Catholics, while the accused are all non-Catholics, with a high percentage of them being Jews—traditional enemies of Roman Catholicism.

Technocracy refuses to be drawn into the struggle between Roman Catholic fascism and communism, either on the side of fascism or communism. Technocracy contends that there is another course for this Continent that is far superior to either of these isms. That course is the way of abundance, security, freedom from toil, and the opportunity of the individual to express himself in a subjectively satisfying manner. That course is the way of Technocracy. It can never be attained through the agency of any politico - economic - religious tyranny, whether it be labeled 'fascism,' 'communism,' 'republicanism,' or 'democracy.'

Technocracy is non - religious, non-philosophical, non-profit, and non-political; hence, it lacks the elements of incentive and excuse that have characterized all the social tyrannies over man through-

out the history of social organizations on this earth. Like science, Technocracy is something brand new, without precedent, counter part, or analogy in the realm of human affairs. Technocracy is the application of science to the field of Human Affairs. In this field, its effects will be no less new and amazing than have the applications of science in other fields, for instance, in astronomy, chemistry, physics, geology, and biology.

In the field of astronomy, human knowledge began to make progress when science defined celestial phenomena in mechanical, physical terms and eliminated the concepts of angels and devils as whimsical regulating devices. Likewise, progress will begin to show up in the field of human affairs when human beings are regarded as mechanical, energy-consuming devices rather than whimsical agents of Good and Evil, whether free-willed or predestined, deserving or undeserving, pure or sinful. The latter concepts have dominated the administration of human affairs for thousands of years and no progress has been noted in all that time. All that passes for social progress at present is the accumulation of factual knowledge and its application to human use, such as that which characterizes science and Technocracy.

In designing the physical operations of the Technate of America, Technocracy is not attempting to define or classify human beings into Good and Evil categories. Technocracy treats them merely as devices which require oxygen, water, food, favorable temperature, movement, rest, and a space in which to dwell and be active. In designing the physical social mechanism for the Technate of America, Technocracy's primary concern is the production and distribution of these physical requirements in abundance for all the population of this Continent, at the least cost in energy, resources, and human effort, and for the longest duration of time. The only 'crime against the state' which Technocracy recognizes is interference with the efficient operation of this mechanism.

In the field of individual human conduct, philosophy and religion will retain a wide field of operation in the Technate; for, the subjective adjustment of the individual to the universe, the society, and the immediate environment

no doubt will possess subtleties beyond the satisfying of his physical needs. Most people will continue to find their subjective satisfactions through philosophy and religion; others may find tranquility through semi-mystical cults of 'psychology' or semantics; while only a few will be able to forsake ritual and rationalizing altogether with equanimity. This is the field of religion and semi-religion and it will be as fertile in the Technate as it is today, if not more so.

Technocracy will free religion from the 'wordly materialism' that infests so much of it today. Religious organizations will be provided the physical facilities for their functions without first having to collect 'for God' a tithe of man-made money. Thereby, Technocracy will free the officials and representatives of religious organizations from suspicions of 'evil' thoughts and actions, intimately connected with money and its secular powers and benefits, which are so prevalent today. Of course, the establishing of Technocracy will automatically eliminate all 'religious' organizations whose sole incentive-for-being is monetary graft.

If the social interests and objectives of the individual followers of the Roman Catholic Faith on this Continent are in harmony with abundance, security, freedom from toil, and the other resultants of science applied to the social order, there is no basis of conflict between them and Technocracy. On the other hand, if the social objectives of the Roman Catholic member are out of harmony with these aims—if he worships a god of scarcity, war, insecurity, toil, and human degradation—or if he follows and supports a church hierarchy that has mundane secular motives in that direction—he naturally will find himself in conflict with Technocracy.

There can be no reconciliation between scarcity and abundance, the Price System and Technocracy, superstition and science. That is the only real issue and conflict on this Continent. That is the issue that must soon be decided by the people of North America one way or the other. The people must realize this and not let themselves be smoke-screened and side-tracked into secondary jurisdictional squabbles between factions within the Price System.

In these simple and direct terms Technocracy places the issue before all North Americans, Roman Catholics and non-Catholics alike. In approaching this issue, vacillation, hesitation, timidity, or double-dealing can lead only to 'more confusion worse confounded' and eventually to c h a o s. The only alternative is Technocracy; f o r, there can be no Price System victory in an area of potential abundance — the Price System m u s t have scarcity.

On this issue, urgently facing the people now living on the Continent of North America, Technocracy asks the affiliates of the Roman Catholic Church, along with all others, 'Where do you stand?'

—Wilton Ivie, CHQ

★ LOS ANGELES.—A firm stand is necessary against a wave of anti-intellectualism in the United States, the president of the American Library Association says.

The attitude, Robert E. Downs told the association's annual conference recently, is manifesting itself in 'attacks on books, on free speech, freedom of inquiry, freedom to teach, and all those rights which we have long held to be guaranteed by the first amendment to the United States constitution.'

Downs told the 4,000 librarians: 'A virulent disease, presently diagnosed as McCarthyism, but antedating the distinguished senator for whom it is named by centuries, is infecting nearly every segment of our governmental structure, from national down to local levels.'

Downs said individual librarians 'have a responsibility in the explosive situation with which we are confronted. When our colleagues are under attack we should come to their defence in every feasible manner.'

Among the books which have fallen under suspicion and investigation said Downs, are those by such prominent Americans as Adlai Stevenson, the Rev. A. Powell Davies, Judge Learned Hand, George Gershwin and State Secretary Dulles.

Downs did not indentify the books by title, but he said: 'It is not difficult to imagine the impression which the audience whom the information libraries are trying to reach is gaining of freedom of speech and of the press in the United States.'

—Associated Press

★ TORONTO.—One of Canada's top atomic scientists said recently that Canadian scientists will 'make even greater advances' in the peacetime application of atomic energy when a new reactor is built at Chalk River, Ont.

Dr. D. A. Keys of Atomic Energy of Canada Limited, a Crown corporation said: 'Our NRX reactor at Chalk River has been described by leading authorities in the United States and Great Britain as one of the most advanced designs in existence.'

Speaking at the 82nd annual convention of the Canadian Manufacturers' Association, he said atomic energy offered a challenge to engineers and scientists to develop a new source of fuel.

It has been estimated that if the present rate of consumption of our natural fuel continues, then by the year 2000, most of the oil, gas and economically-recoverable coal will have been consumed.'

—Canadian Press

Book Burning Suggestions

Columnist and humorist ***Eric Nicol*** *has some suggestions for Senator McCarthy and other book burners in the United States. He examines the best known nursery stories and the drill manual of the armed forces and comes to the conclusion that these are subversive.*

THE U.S. is burning books Senator McCarthy considers subversive. As one long concerned about the infiltration of Communist propaganda into our nursery stories, I trust that the good senator will add to his bonfire:

1. Little Red Riding Hood: 'Red' is the key word here. Disguised as a little girl, Marxism is portrayed as meeting the Wolf (capitalism) while taking food to Grandma (the proletariat). When the Wolf eats them, he is killed. This must burn.

2. Goldilocks and the Three Bears. In this poisonous fable, Goldilocks (free enterprise) plunders the home of the Bear (USSR). Actual home-life in Russia is falsified (porridge, chairs, beds, etc.) to create impression in child's mind that people live normal lives there. This must burn.

3. Mother Goose. A thinly-veiled attack on the American eagle. The author of this bolshevik tale, a comic mouthpiece called Anonymous, also plays up the Momism in American life. The American mother must be defended against Red slander. This must burn.

4. One, two, button my shoe,
Three, four, open the door . . .

Here ('open the door') is a clear-

Fitzpatrick in The St. Louis Post-Dispatch

Old Ashes—Strange New Fire

Reprinted from VANCOUVER PROVINCE
AUGUST, 1953

cut attack on protective tariffs, the most vital support of our high standard of living. The deadly jingle goes on to urge actual revolution: 'five, six, pick up sticks, seven, eight, don't be late . . .' Once these subversive ideas are planted in the child's mind it might take five years' subscription to **Time** to eradicate them. This must burn.

5. **Four and twenty black birds, baked in a pie . . .**

A distortion of living conditions of the Negro in this country, the favorite comic device for discrediting the American way of life. This must burn.

This is just a sampling of the Red-inspired literature flooding our nurseries. But the bonfire begs for bigger game.

For example, how many of us realize that the very drill manuals of our armed forces are full of Socialist propaganda? On virtually every page of these manuals we find the word 'left'—'left turn,' 'left wheel,' 'by the left,' etc. Obviously we must incinerate these traitorous drill books and issue new ones in which all movements are done by the right. Two wrongs don't make a right, but three rights do make a left. 'No left turn' . . . on the American way of life.

Evidence gathered in recent investigations into American schools and colleges also reveals that 'left' is being taught as the past participle of the verb 'to leave.' Without wishing to prejudice academic freedom, we must order the teachers to cut that out. 'Leaved' is a perfectly good American past participle. All grammars stating otherwise must be burned.

Finally, we must recognize that one of the colors of the spectrum has a name with a subversive political connotation. I refer, of course, to the color between orange and purple. As long as this color is allowed to carry this dangerous weapon, Communist propaganda will thrive on every fire truck, on every boiled lobster, on every woman's lips. The name will be in our very blood.

I therefore suggest that the color, which after all is an attractive one, be renamed 'joe,' in honor of the senator from Wisconsin. Hereafter the flag will be joe, white and blue, and all books will burn a fiery joe.

For your approval and immediate action, President Eisenhower. **—Eric Nicol**

'Water--Or Your Life'

Technocracy recommends the reading of 'Water—Or Your Life' by all North Americans as a better-than-usual analysis of the profligate waste of part of the Continent's water resources. In addition, this Organization proposes an overall solution to the problem.

'HERE is a refreshing and earth-soaking rain falling on a desert of waste, misinformation and nation-wide confusion. The book comes at a time when, all across this once-watered continent, crippling water shortages have been appearing while ground waters continue to recede and demands increase.'

So says Jay N. Darling in his foreword to 'Water — Or Your Life,' a treatise on water supplies and usage within the United States. Author of the 17-chapter, 306-page book is Arthur H. Carhart, and publishers are J. B. Lippincott Company, Philadelphia and New York.

Mr. Carhart, a well-known conservationist, was for four years on the U.S. Forest Service, and later directed Federal Aid in Wildlife Restoration for the Colorado Fish and Game Commission. He deals with water resources in four general categories, namely: (a) our reliance on water for continued existence; (b) how much we use and how much there is; (c) how we are currently handling our resources; and (d) what must be done from now on. Though its data pertains chiefly to the United States, the book deals with a problem of Continental proportions.

In 1949 New York City suffered a water shortage. People had to skip baths, do without shaves, let dishes and laundry pile up, and be subjected to other inconveniences. Yet the 1,200,000,000 gallons of water pumped daily from the Hudson River constituted less than 10% of its daily flow. Where, then, was the shortage?

Since, according to the author, there are 55,000,000 square miles of land surface compared with 142,000,000 square miles of water surface on the globe, it will be seen that 'by gross volume water is about the most plentiful substance on the earth's surface.' But its distribution about the various

land surfaces is very spotty and uneven, and much of that at our command has been polluted in various ways so that it cannot be used. There is the rub. We are short in many areas of **usable** water. Consequently, we are making excessive demands on clean, fresh water sources, to the point where they are dwindling or even, in some cases, drying up completely.

'Until recently,' says Carhart, 'we have viewed water as having a unique position in the basic resource wealth of the nation. We have harbored the illusion that it is "inexhaustible."

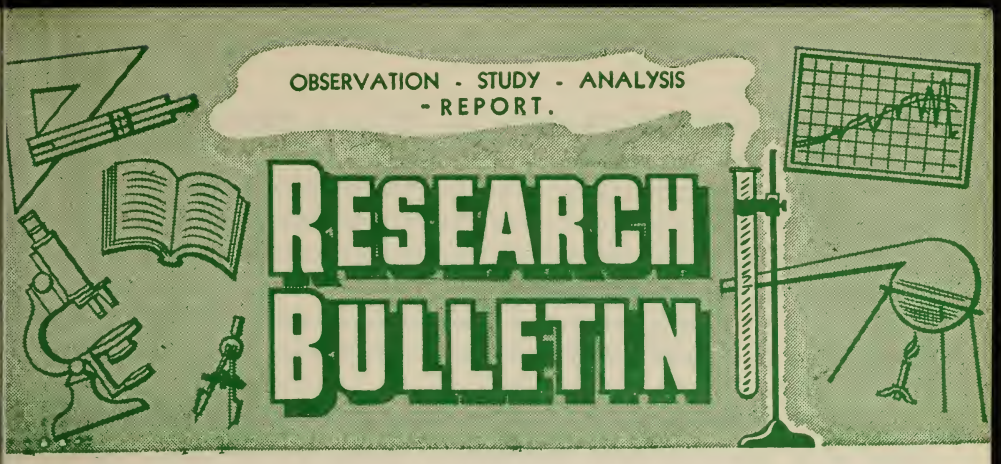
'Water resources are not inexhaustible.'

But the illusion that it is, however mistaken, has led man to be profligate with one of the substances most vital to his continued existence. This is graphically illustrated in the second chapter.

Civilizations have risen and fallen on the strength or weakness of their available water supplies. Archaeologists have discovered instances of this all over the world —including North America. Probably the best of such examples on this Continent may be found in excavations made in the desert land of Arizona and New Mexico.

The excavations reveal only a few bones and traces of dwellings to evidence the establishment about 10,000 years ago af a thriving civilization—the Cochise Culture. Geological studies of the surrounding terrain show that there were lakes and rivers to make the home of the Cochise Indians a verdant land. Abundant forests of hickory and other hardwoods, together with the game within them, furnished shelter and food to the Cochise. But the lakes and rivers dried up, the forests died, and with them this ancient civilization — all for the lack of water. Cactus, yucca and creosote bush supplanted forests in what had become desert land.

This story has been paralleled so often in different places that a pattern can be established — no water, no civilization. Yet rather than profit from such examples, we blindly write new chapters to the chronicle. Within the last decade, for instance, land speculators in Arizona have sunk wells into ground - water reservoirs around Phoenix and Tucson and pumped water at twice the recharge rate. Inevitably, a water shortage forc-



AUGUST, 1953 *Compiled by Editorial Staff* No. 94

Technology takes over the farm

FOR generations productivity was a word in the textbooks. Recently it's shown up more and more in collective bargaining.

But farmers live productivity every day. The business of getting more out of the land with less work is making over farms—and it has made over the farmer. The simple, rustic soul is gone; today he's a hard-headed capitalist figuring costs like any manufacturer.

In the last 15 years, output per man-hour has risen faster on the farm than in any long-established industry—and three times as fast as in industry generally.

The way of life that to most people means farming—self sufficient and isolated—has virtually disappeared. In its place is an industry that requires a terrific amount of technical knowhow and a lot of capital. The cost of a two-plow tractor would have financed the production expenses on the average U.S. farm in 1910 for three and one half years.

The biggest changes have come in the last 15 years; for the most part they are irreversible. The technological revolution, as the Agri-

culture Dept. calls the shift, really got rolling in the early years of World War II for **two reasons**:

A tremendous backlog of scientific discoveries and technological improvements had piled up during the 20 years between wars. The potential of these improvements was known, but farmers had not taken advantage of them because market prices were so low. As one farmer put it, during the long stretch of drought and depression, 'about all we could be sure about was that fertilizer cost money, which we didn't have to spare.'

With the war came the money the farmer needed to try out the better seed, more powerful equipment, commercial fertilizers, pesticides, lime, and other materials on which so much of today's output is dependent. Government incentives for crop diversification, the doubling of farm prices, and the tripling of the farmer's net income, all in less than five years, pushed production faster and further than would have been possible under peacetime conditions. But what made the acceleration possible was the foundation laid by scientists working in window boxes during the interwar years.

Take the case of Wilbur Goodhue, who raises grain and livestock a few miles south of Des Moines. Goodhue is not an 'average' farmer by any means. But he is typical of progressive commercial farmers in central Iowa, and he has counterparts in the Connecticut Valley, southern California, and just about every other major agricultural area of the country.

In 1938 Goodhue farmed 138 acres, had 250 hogs and 30 beef cattle. He owned a tractor and shared ownership of a combine and corn picker with his brother down the road. He did a little liming, but used no commercial fertilizer. Hay was made loose, dried in the field, and stored. He hadn't tried chemical weed killers or pesticides.

The Goodhues had a Delco system to supply electric power for the radio, washing machine, and electric iron in the house. A windmill provided water.

This year Goodhue is farming 700 acres. He raises 500 hogs and 135 feeding cattle. He owns five tractors, two corn pickers, one combine, a weed sprayer, and a hay chopper. All the machinery is now

the four-row type, with hydraulic systems for raising and lowering plows, discs, hay equipment.

All of the Goodhue fields are regularly soil tested and limed. Commercial fertilizer is used on corn and other crops. There is an established rotation system for the entire 700 acres. Since the land is flat, there is no need for contouring or other special soil practices.

The farm now receives electric power from a central station. Goodhue has a farm shop equipped with welder, electric drills, and other power equipment. In the house there's an automatic washer, dryer, dishwasher, electric stove, ironer, and television set.

All hay is now cut and chopped in the field and much of it is made into grass silage. Goodhue uses 2-4D for spraying weeds, DDT to control flies and other insects around the livestock. He puts antibiotics in hog feed and uses crossbred hogs.

The greater amounts and wider variety of food produced by Wilbur Goodhue and other commercial farmers across the country are much more striking when you consider that they have increased production and at the same time lost workers. There are now less than 7 million workers on the farms, a net loss of 2.8 million since 1939.

—Business Week

First Propane Gas Locomotive

INTRODUCING a new era in railroad motive power, Union Pacific has developed and made successful early tests of the world's first propane gas-operated turbine-electric locomotive.

In relation to its length, the new breed of iron horse has proved itself the most powerful of any type, according to David S. Neuhart, Union Pacific's general superintendent of motive power and machinery.

A single unit weighing nearly 276 tons, it delivers upward of 4800 horsepower—more than is produced by three diesel units operating together, Neuhart stated. In tests recently the gas turbine has handled a 79-car train of 4650 tons.

The application of propane to the gas turbine is the result of joint research of Union Pacific, Richfield Oil Corp., and General Electric.

It is planned to place this and similar locomotives in regular freight service between Los Angeles and Salt Lake City. The present turbine is geared down for a top rate of 65 miles per hour, but railroad officials regard this type of power plant as suitable for high-speed passenger trains.

'Operating efficiency and maintenance economy are the factors that led us into this project,' said Neuhart.

'We don't yet know all about operating costs under various conditions. But we do know the gas turbine is very flexible in handling trains, and it will start and pull a heavier load. Also, because propane burns clean and leaves no carbon-like deposit on the turbine blades, we expect much less maintenance cost and time lost in overhauls. Stationary engines of this type have operated as much as 30,000 hours without repairs.'

Compared with a diesel engine, with its scores of moving parts, the gas turbine is basically a simple machine. A compressor resembling a set of fifteen windmills on a single shaft, forces a torrent of air into six combustion chambers where it is mixed and burned with the propane fuel, which also is forced in under high pressure. The resulting blast strikes the curved blades of the turbine, whirling it at a rate of some 6900 R.P.M.

Through reduction gears, the turbine shaft drives four generators, which power eight traction motors on the axles between the sixteen wheels.

About 15,000 cubic feet per minute of completely burned, smogless exhaust gases are discharged through a port in the roof at a velocity of approximately 150 miles per hour. Some railroaders call the locomotive 'Chinook,' which means 'warm wind,' and others term it 'the Big Wind.' Its exhaust noise is considerable at close range but is dissipated sharply with distance because the sound has no dominant pitch.

An odd feature of the turbine, it was pointed out, is that it is the only engine that likes cold weather. This is because cold air is denser,

and the compressor thus can force more air into the combustion chambers.

The propane fuel supply is carried in a special tender—a tank car with superstructure enclosing an intricate system of valves and controls. The outer shell covers a four-inch layer of cork, within which is the actual container. Inside, also, is a heat exchanger—a sort of radiator—through which steam is passed to further increase the pressure under which the liquid propane is confined.

Propane is the lightest fraction of petroleum, explained Gerthal French, Richfield research engineer. As a gas, most of it comes out of oil wells, where it lies in the vapor spaces above the oil. Some propane is obtained during oil refining.

Highly volatile, propane has an octane rating of 125. Butane, a slightly heavier product, is rated at 95. Other petroleum fractions, down the refining scale, are casing head and other gasolines, kerosene, diesel fuel, lubricating oils and fuel oils ending with residual bunker fuel.

'Most propane is wasted today,' said French. 'It is general practice in oil fields to burn off propane as it is extracted because it would be too costly to build pressure storage tanks.' **—Associated Press**

Faster Cargo Unloading

THE mechanical handling of bulk materials has just received two new boosts. One is a system for automatically unloading ships, barges, railroad cars, and bins. The other is a special freight car which, in unloading, can cause dry materials to flow out like liquid.

The unloader for ships, developed by Cargo Handlers, Inc., Van Dyke, Mich., can also be used for trimming and moving stockpiles. It handles ores, coal, salt, sugar, sand, gravel, grain, crushed stone.

Essentially, it is a self-feeding scraper mechanism that is built as an integral part of elevators or conveyors. Lowered into a hold or bin, it works its way vertically down one side and horizontally across

the bottom, maintaining a continuous flow of material into the conveyor. It is automatically controlled by hydraulic units.

The scrapers do so thorough a job that there is no need to bring in extra men and machines to clean the hold. Cargo Handlers, Inc., believes its machine will take only 12 hours to unload a ship's grain cargo that would take 20 to 36 hours by conventional methods. Capacity for moving coal is estimated up to 400 or 500 tons an hour.

The new freight car, designed by General American Transportation Corp., Chicago, is a covered hopper job specially adapted for bulk handling of dry powdered materials such as feeds, chemicals, and starches. GATX says the cars can handle some 200 materials that hitherto have had to be shipped in bags.

Cargo can be loaded conventionally by gravity through hatches topside, and unloaded the same way through bottom outlets. But its real parlor trick is its use of the Fuller Airslide, developed by the Fuller Co. of Catasaqua, Pa., to improve cargo flow.

The Airslide is a shallow steel channel running along the bottom of the car's slopping-sided bins. A special fabric is stretched over the channel, closing its open, upper side. Air is let into the space between channel and fabric at a pressure of about 1 lb. psi. As the air works its way up through the fabric, it slowly aerates the bulk material above. This aeration causes the powdered material to flow like water into the conveyors, instead of mounding up.

The cars come in three sizes: 2,000 cu. ft., 2,600 cu. ft., and 3,600 cu. ft. GATX says they are moisture- and weather-proof, and cost little more than conventional cars, though the bulk unloading is both faster and cheaper.

Shippers using the cars need only one additional piece of equipment: a low-pressure blower. Models delivering 200 cu. ft. or more of air per minute are priced between $500 and $600.

★ MOST WORKERS will relish a recent prediction that mechanization of American industry eventually will result in a 20-hour work week.

It was made by Dr. Lillian M. Galbreth before the Society for the Advancement of Management, at Washington, D.C., recently.

—Labor Editor Jack Stevens in Los Angeles Examiner

Cold-Flow Press

NEW BEDFORD, Mass.—A Massachusetts inventor developed a machine to shape metals without using heat or percussion.

In a 1940 demonstration, on a pilot model press, he demonstrated it for high government officials, producing an important machine gun part in about one second. Conventional methods required over 43 minutes and eight operations on eight different tools.

Now in 1953, some 13 years later, the inventor is long since dead, his associates on the frazzled edge of frustration and economic defeat, and the process still is unheralded and unused.

Attemps to have it introduced in the critical war years, when its sponsors claim it might have saved multi-millions of dollars in defense costs, produced nothing but a series of heartbreaks. Its backers are convinced they got a fantastic run-around.

The New Bedford Standard-Times, which said it has gained exclusive access to government records in the case, recently began publication of a series of news stories on the process, the 'Telenar Cold Flow Precision Press.'

The Standard-Times, in a foreword, said the impact of the Telenar process on the machine-tool industry would be comparable to that on the petroleum industry if someone should develop an engine that would run on water.

The series said:

'The patent owner and chief Telenar sponsor charges that despite conclusive evidence of his press' value, its production was blocked because it would have put thousands of existing machine tools into discard and upend the industry.

'His reputation and the potentiality of his press were smeared so effectively, the sponsor charges, that private industry—now that the war is over, and steel is available without government priority — is afraid to get involved for fear of federal reprisal.'

The Standard-Times said 'files of the justice department, which probed the case, indicate support of the view that production of the

press was blocked (during the war) by interests operating through the government . . .'

It added 'the opposition may be continuing in post-war "negotiations" between the patent owner and Washington' under the present administration.

Telenar was invented by the late Dr. Charles Hathaway Howland-Shearman, a physicist engineer who experimented for years on cold flow of metals. **—British United Press**

Gas Turbine Progress

THE gas turbine is the most adaptable and flexible source of power known to mankind. It can cover a very great range of power, it can be installed where other power machinery cannot, and it can be operated in circumstances which would make it quite uneconomic for either steam or diesel plant to be used.

For example, the gas turbine can operate, even on the scale of a large power station, virtually without any water supply beyond what is required to supply the engineers with cups of tea. And this is true of gas turbine locomotives operating over vast, waterless regions, or perhaps Arctic regions where water is very expensive.

The water costs of locomotives on many routes in the world, and the water costs of steam power stations, form quite a substantial proportion of the total operating cost. In the case of steam locomotives, water can amount to 15 percent of the total fuel bill.

The buildings for power stations housing diesel for steam engines have to be substantial, but may be quite light and easily transported when housing a gas turbine because the gas turbine is much lighter and is vibrationless.

There are many interesting possibilities as well. For example, if you take a gas turbine and, instead of making it drive something by burning fuel, you drive it round by some external power and cool the compressed air, you have a form of refrigerator. It is a form, more-

over, well adapted for extreme refrigeration of large quantities of air, so that it can actually liquefy the air.

Now, liquid air is the source of commercial oxygen. Thus, gas turbine technology, instead of producing a propulsion jet, can be used to produce oxygen, which is a fuel in world demand. That is the cold end of the scale.

Equally you can apply a gas turbine—and we are seeking to do so in the United Kingdom—to drive a blast furnace, using the waste energy of the blast furnace itself. This we believe will produce very great economies in actual coal consumption, which will of course be reflected in the price of iron and steel, but above all will be reflected in terms of conservation of coal and of all the blood and sweat and toil that the production of coal requires.

The gas turbine is not particular about the fuel it will consume. At present gas turbines normally run either on liquid fuels of one grade or another or on natural gas. Within a very short time several will be running—and I trust satisfactorily—on coal; yet another will be running on peat. I have various inquiries to deal with for running it on such things as bagasse—crushed sugar-cane and other trashy matter not normally regarded as an economic fuel. As a long-term possibility I hope to see the heat of nuclear fission used as the energy source.

Taking one thing with another the advent of jet propulsion has done a lot more than propel aircraft. It also gave the push required to start a whole new industry, affecting in its turn many other industries. Its future is in the air, under the ground, and almost anywhere on the earth's surface; in ships, power stations, railways, on the roads. It is used for pumping oil pipelines, blowing in blast furnaces, pulling rail or road passengers, driving dynamos.

Gas turbine progress is already great. It is going to be not only an industrial, but a sociological and humanitarian achievement of the highest order. The amount of ground that has been covered is virtually unlimited.

—Patrick Johnson, managing director of Power Jets Ltd., on the BBC's London Calling

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent

Science and Technology

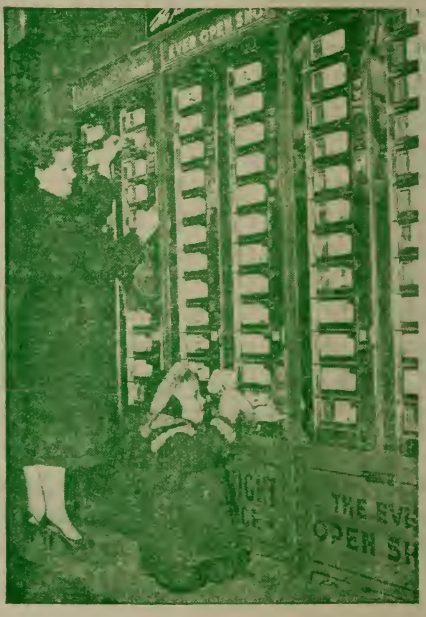
A NEW MECHANIZED PLANT, ESpecially designed for the manufacture of 'Steel Shot' blast-cleaning abrasive was recently completed by American Wheelabrator & Equipment Corp., Mishawaka, Ind. It is equipped with electric melting furnaces and a heat-treating room which uses automatically controlled equipment, and is designed for easy housekeeping and maximum safety. The plant is said to be the largest of its kind.

LONG-DISCUSSED AND FREQUENTly demonstrated, remote-control units for electric industrial trucks can now be had commercially. The order-picker, who carries the control unit on his belt, can even move his trailer train around corners without having to leave his order-picking. Barrett-Cravens Co., says the distance of the operator from the drive units is limited only by his range of vision.

FIRST RAILROAD TO USE MICROwaves to control switches, signals and interlocking is a 90-mile track in Venezuela, from U.S. Steel's Cerro Bolivar mine to harbor facilities at Puerto Ordaz. Firms supplying the electronic equipment are Union Switch & Signal Co., a division of Westinghouse Air Brake Co., and Radio Corp of America.

A SORT OF AUTOMATIC SUPERmarket for inexpensive items is getting a test workout in the Pennsylvania Station at Newark, New Jersey. In setting it up, Union News Co. took a tip from Swedish shops, which use the Automatique at night so customers can buy after hours.

The Newark installation handles 192



items—toys, toothpaste, tissues and the like; items run from 10 to 25 cents. Customers can see the merchandise through the window, stick a coin in the slot, and out it comes. The machine, made in Europe, is distributed by Automatique, Inc., New York City.

A VERTICAL CASE CONVEYOR, said to increase handling volume up to 100%, has been announced by Conveyor Specialties Co., St. Paul, Minn. Cases on a horizontal conveyor belt are automatically fed into the vertical in-line system, where they are tightly gripped between friction-surface conveyor belts, backed up with spring-loaded rollers.

MINIATURIZATION IS GETTING another big boost. Motorola, Inc., Chicago, has developed an inverted speaker for small radios. Motorola, working with Carbonneau Industries, has found a way to move the magnet from the rear of the speaker to the front, reducing depth by 50%.

PLASTIC PUMPS, VALVES, ACCESories, and fittings will be produced by Cooper Alloy Foundry Co., Hillside, N.J. A major producer of corrosion-resistant alloys, the company says that it is going into the new line in order to meet increased demand for processing equipment that avoids the danger of metallic contamination, and to meet the need of the chemical industry for corrosion-resistant equipment.

URANIUM HUNTERS HAVE TAKEN to the air in Arizona. Field geologists, working for the Atomic Energy Commission, have already staked out nearly 3000 square miles in Coconino County. Light aircraft carry devices that can detect radiation from as high as 100 feet.

A 38-TON SHAFT FOR THE GIANT hydroelectric plant at McNary Dam is shown being removed from a vertical boring machine at the Bethlehem (Pa.) plant of Bethlehem Steel Co. The $280,000,000 dam on the Columbia River will have a total capacity of nearly 1,000,000 kw.

A BOTTOMS-UP MACHINE, WHICH automatically inverts 960 beer bottles (empties) per minute, has been developed by RCA Victor Division of Radio Corp. of America, Camden, N. J. The machine employs gravity to get bottles swiftly and safely out of their cases and on their way to washing equipment.

HOME DEHUMIDIFIERS CAN BE turned on and off automatically with a new control instrument developed by Minneapolis-Honeywell Regulator Co.,

Minneapolis, Minn. It uses a human hair as the sensing element to detect moisture changes. The dehumidifier plugs into the control unit, which in turn plugs into a wall socket.

CONTINUOUS INFRARED ANALYSis of a liquid or gas process stream is now possible with a new Automatic Multi-Component Analyzer in production at Perkin-Elmer Corp., Norwalk, Conn. It is designed to monitor the concentration of up to six components in a liquid or gas stream flowing through a small pilot plant. The entire unit is mounted in a mobile metal console.

A STEAM TURBINE-GENERATOR unit recently ordered from General Electric Co. for the River Rouge Station of Detroit Edison Co. will be the world's largest. It will provide enough electric power for a city of 700,000.

MICROJET IS A TINY, PNEUMATIC device that controls turbine discharge pressure on jet engines. Developed by Solar Aircraft Co., San Diego, Calif., the device automatically computes what discharge pressure should be under all flight conditions, and notes any discrepancy between ideal and actual pressure. When there is a discrepancy, electric signals flash to the other engine controls that rectify the pressure.

A NEW BOILER AND TURBOGENerating unit designed to cross the barrier of the critical pressure of steam for the first time in the commercial production of electric power has been ordered by American Gas & Electric Service Co. Babcock & Wilcox Co. will build the boiler to stand steam pressure of 4500 psi. (almost double the present record) at 1150 F. General Electric Co. will make the 120,000-kw. turbine.

A GOLIATH AMONG SHAVERS IS the new gear-shaving machine constructed by National Broach & Machine Co., Detroit, Mich. It can handle gears up to 180 inch pitch diameter (the kind that weighs about 30 tons and has from 900 to 1800 teeth used in marine power-plants). The shaver weighs about 115 tons, operates on precision of 0.0002 inch.

A NEW ELECTROPLATING PLANT, which introduces mass-production techniques to job-lot electro-plating, is now operating at the Swissvale (Pa.) plant of Union Switch & Signal Division of Westinghouse Air Brake Co. Facilities provide for fully and semi-automatic plating of a variety of metals, including nickel, copper, zinc, cadmium, chromium, gold and silver. Originally designed to consolidate electroplating facilities for the company, the new plant will soon be available for commercial plating.

★ COLUMBUS, Ohio.--Dr. J. Allen Hynek, Ohio State University physics and astronomy professor, thinks it's time we developed ways to harness the sun's energy for industrial power, since we'll have to come to it eventually.

One of the systems, the scientist suggested, consisted of a 'black hemisphere, mounted on a tower and serving as an energy collector.' He said it 'could supply modest power needs at a relatively small cost.' —*British United Press*

ed thousands of irrigated acres into idleness.

'A nation,' comments Carhart, 'cannot live long without water. Nor can you.'

The human body is composed about 70% of water, losing an average of 6 to 8 pints daily which must be replaced either through food or beverages. But these fundamental body needs are the least in volume of human demands on water—particularly in a high-energy civilization. There are besides such uses as having baths, cleaning teeth, shaving, flushing toilets, washing laundry and dishes, sprinkling lawns, etc., etc.

'In the past century the population of the nation (U.S.) has increased 600 percent. In that same time the use of water has increased several thousand percent.

'You need only those 6 or 8 pints a day to keep alive—but personal demands of the average American city dweller now stand at something like 200 gallons in the course of the living day. . . .'

The author continues with an explanation that even this volume of water is but a small fraction of total water usage. Industry demands staggering amounts, and he gives several examples—including that of 60,000 to 70,000 gallons being involved in producing one ton of paper, the amount varying with the grade produced.

Agriculture takes other huge quantities, Carhart points out, with examples given of 650,000 gallons per acre for grain crops to 1,500,000 gallons per acre for citrus fruit groves. Experts, he says, have estimated that gross national water requirements are 200 **billion** gallons daily, including industrial and agricultural needs. Much of the water for industrial use, incidentally, must be clear and unpolluted.

Companies seeking new plant locations today are more concerned with abundant clean water supplies than a proximity to raw materials which can be transported more economically. Because surface water too often carries impurities which can be removed only with difficulty and at great expense, they strive to obtain good ground water supplies which are industrially acceptable without processing.

There's where the trouble starts! Several companies often sink wells into the same reservoir within a limited area and start

withdrawing water, each quite oblivious of similar activities being carried on by neighbouring plants. By this process, a group of plants at Louisville, Kentucky, in attempting to meet their World War II production demands pumped 75 million gallons of water daily from underground supplies —a rate almost double the recharge rate of 40 million gallons daily. This rate of pumpage, if not checked, would have exhausted the available supplies within two years.

Faced with similar prospects, some industries are by sheer necessity using the same water repeatedly in certain processes before finally discharging it. An imposing example of this is the big Celanese plant at Bishop, Texas, which through the installation of a huge cooling tower reduced its daily water usage from 230 million gallons to **4 million** gallons, thus effecting the use of the same water more than fifty times before discharging it as waste flow.

Having devoted six chapters to the importance of water to our lives and how much we use of it, Carhart proceeds to tell how we are using water resources.

There are some ways in which we can use water without losing or spoiling it for later use, such as the hydroelectric power generator, navigation and recreation.

In respect to the generation of electric power, the author causes some surprise in his apparent favoring of steam-generated power over the hydroelectric turbine. Since he admits that the water thus used can later be used again for other purposes, it is not a matter of water conservation that bothers him. No—he endorses the steam plant on the basis of lower monetary cost, supplementing his condonement with the information that they supply three-quarters of the nation's electric energy at a relatively lower rate than that supplied by the huge public hydroelectric projects which account for the other quarter.

As a person living within a Price System society, the author's concern for his fellow citizens' wallets is quite commendable, but as a conservationist he surely realizes that our water resources, while not inexhaustible, **are** replaceable. On the other hand, coal—the source of heat in steam plant generators—is an irreplaceable resource meriting conservation on a high priority basis. This

consideration alone warrants an almost complete supplanting of steam plants by hydroelectric power generation, with long-range physical economy taking precedence over monetary economy. Technocracy contends that it is from this point of view that a conservationist should consider the foregoing matter, rather than from the usual one of Price System limitations even though he **and** his problem are subjected to its limitations.

Returning to physical reality, Carhart stresses in Chapter 7 the importance of maintaining many lakes and rivers in their natural state as sanctuaries for wildlife and as recreational areas for holidaying citizens whose natural environment is also of the great outdoors rather than in cities. The water used for boating or fishing is not thus spoiled and will pass from the lakes into streams and down past factory sites, the source of first pollutions. The author tells also of a number of ill-advised dams built by the U.S. Bureau of Reclamation for power and irrigation which did not consider conservation or biological factors, and have resulted in the virtual death of the streams on which they were built, together with accompanying fish life.

Carhart describes in Chapter 8 the 'hydrological cycle' which brings water from oceans to land in the form of rain or snow, then returns eventually to the ocean by gravity. In the next chapter, captioned 'Water Runs Downhill,' he tells us that 'far too little consideration has been given to the ways water runs downhill. It can be destructive or beneficial depending on what quality of water it may be, in what volume, and how and when it runs.'

The nine major rivers of the U.S. empty 8 **trillion** gallons of water per minute into the oceans. Their runoff is received from tributary streams which in turn are fed directly from the adjoining land either in floods caused by torrential rains or through gradual seepage. State of the vegetation on these lands generally determines whether the runoff is beneficial or detrimental. He cites two contrasting illustrations from his own experience in substantiation of these phenomena. His resultant observations led him to the conclusion that water management begins in the small feeder basins high up on a drainage area

—not down on the main trunk of a river.

He enlarges on the theme of water runoff from the standpoint of soil textures, vegetation cover, slope of land, methods of soil tillage, grazing, etc. Several examples of soil damage on a national scale are given, including the rather alarming case of siltation caused by excessive runoff into Lake Mead, the reservoir behind Hoover (or Boulder) Dam on the Colorado River: 'Since 1929, the silt carried into this reservoir each year has amounted on the average to 100,000 acres of ground, one foot deep! In fifteen years of operation, this mud has caused Lake Mead to lose an estimated 1,500,000 acre feet of water storage space. Perhaps of greatest significance in this picture is the fact that 97 percent of the watershed above Lake Mead is either federal or state owned — and is grazed and grazed under "permits" and leases to private livestock operators.' Some measures of corrective experiment that are being made on such problems are described at the end of the chapter.

From here, Carhart proceeds to the (c) phase of his analysis, namely, how we are currently handling our resources. Here we find that the matter of 'doing something' about water has been delegated to hundreds of groups headed by the Bureau of Reclamation and the Army Engineers. There is little or no co-ordination among these groups in attaining their objectives, for they all have their own axes to grind and their interests in water are chiefly partisan. The most flagrant cases of agencies working at cross-purposes, of course, are the projects of the Army Engineers and the Bureau of Reclamation since they are the major ones involved.

The principal objective of the Engineers, headed by Army personnel but staffed by civilians, is to work upstream from the mouths of rivers, keeping them dredged for navigation and controlling (rather than preventing) floods. Reclamation, on the other hand, works downstream from the headwaters to construct dams for power and irrigation. Both have huge financial appropriations to carry on their work, but, says the author, 'They have collided, clashed, and competed. They have raced to see who could stake out the narrow places in river valleys first, and then raced to see who

had the most punch to put over authorization and appropriations in Congress.'

Some grandiose and ornate schemes have been dreamed up. Reclamation, for instance, designed the Central Arizona Project to 'make the desert bloom' again where excessive withdrawal of groundwater had threatened agricultural lands with sterility. Though residents of the area were relatively resigned to the fate, Reclamation decided to rescue the district around Phoenix with their scheme which would lift 1,200,000 acre feet across mountain ranges from the Colorado River to the thirsty lands. The scheme would divert water from California lands which could better use it and at less cost since they were in the natural drainage basin of the river. Carhart asks: 'Is it reasonable to expend what this project would cost ($10,000 per acre) to rescue 150,000 acres while 500,000 acres in other parts of the country are being retired from tillage **each year** but might be maintained through good soil conservation projects?'

This $1,500,000,000 scheme is far outclassed by some others including the Colorado - Big Thompson, the Gunnison-Arkansas, the Blue-South Platte, and the Pick-Sloan of the Missouri basin which alone would cost $6 billions or more. Though Congress gave it the green light, the scheme, which brought the Army Engineers and the Bureau of Reclamation into head-on collision, was roundly criticized by the Engineers' Joint Council, a body of highly qualified experts at the very top of the engineering profession.

A few projects constructed in past years have served their intended purposes very well though they cost a minute fraction of today's huge affairs. Outstanding among these have been the Huntley Project in southern Montana, the Yuma Project of California and Arizona, and the Minidoka Project in south central Idaho, the combined cost of which is about 1/40th of that of the proposed Central Arizona Project.

Chapter 13 outlines a squabble between cattlemen and personnel of the U.S. Forest Service. The cattlemen have been attempting to acquire grazing rights for their herds in public park lands, whereas the Forest Service men with whom the author was formerly associated are determined to pre-

clude them from such use on the grounds that the lands in question are in danger of being overgrazed and consequently constitute a potential threat to the watersheds. Correct enough. But again the author seems more concerned with the dollar aspect of the proposition than with genuine conservation. He points out that the capital gain of piping water out of these areas to thirsty agricultural or industrial regions would be far in excess to that which might be realized through the raising and sale of livestock—especially when in some park areas the forage is so light that an average of thirty acres is required to sustain one cow. Such considerations, however, have no place in a study of water resources.

Remember the earlier reference to the pollution of streams? We get the sickening significance of that in former U. S. Surgeon General Thomas Parran's report which states that in 1950 2½ **billion tons** of sewage were dumped into streams and rivers every day. The pollution continues and the single line of defence against it is chlorination. Serious effects have resulted in some of the 3000 communities which tried to economize by avoiding water purification. Besides sewage, waters are polluted by wastes from coal mines, oil fields, many food-processing manufacturers, paper pulp mills, steel mills and various other industries. Only a few isolated communities have so far taken concerted action to prevent pollution rather than to control it.

In Chapter 15, Carhart delves into the legal aspects of water management and finds that, 'In general, our laws governing water uses lag seriously behind the requirements of the day. . . . Not only does the law lag, but we are hampered by precedents set by judicial opinions which may have applied to conditions of a half century or more ago, but are far short of meeting current necessities.' In short, the laws fall down because of their tendency to recognize partisan demands on water usage rather than to aim at effecting from it the optimum national welfare.

Nearing book's end, the author touches on 'rain-making.' Contrasted with the weird rituals of the past to achieve this result, modern experiments have been scientific and correspondingly

more successful. The modern technique is to release small pieces of silver iodide into the atmosphere from generators on the ground. If atmospheric conditions are favorable, the moist air in clouds adheres to these particles, forms raindrops, then falls—to the accompaniment of objections of residents in other areas who claim that, if not interfered with, the clouds would have dumped their loads in these other areas. Who knows? Anyway, 'There is no possible way to determine whether a cloud area might have poured water down in even greater volume without seeding than with it.' Natural processes are still our only reliable source of water supply.

'Something Must Be Done' is the masterpiece of understatement with which Carhart heads his last chapter.

Aside from describing a few of the physical measures that must be taken to guard our water resources, he has amazingly little to offer in the way of a solution. While he tells his reader that the federal government organization for handling water matters is a mess, he offers no suggestions as to the form of organization required to handle them adequately. He rejects such projects as the Tennessee Valley Authority and similar proposed 'authorities' for other river systems because their imposition 'would be a fundamental abandonment of the existing democratic methods of American government.' Is Carhart more concerned with this possible loss than with the prospect that these authorities would not be integrated with each other to work out a national solution to the water problem, but would be separate projects working out patchwork answers to localized situations?

Probably his most pungent approach to a realistic answer is stated in the last three lines of his book:

'The answer to where we may land in the future lies in the hands of an informed, aroused, alert, thinking public.

'It lies in your hands.'

* * *

Technocracy Inc. accepts the challenge of Arthur H. Carhart as one affecting the entire North American Continent, not merely the United States. Moreover, Technocracy recommends the reading of 'Water—Or Your Life' by all North Americans as a bet-

ter-than-usual analysis of the profligate waste of part of the Continent's water resources. In addition, this Organization proposes an overall solution to the problem.

On cursory examination it seems odd that a man who is recognized as a 'leader in the conservation field' should see no clear-cut solution to the problem he projects. But on the basis of some of his remarks he appears to be first and foremost a champion of the status quo—an upholder of the 'American way of life' of financial free enterprise and political democracy—and secondarily a conservationist. If this premise is correct, there is no wonder he can suggest no solution for there is none within the framework of a Price System. Those who question this need only be referred to the text where on some projects Carhart has objected to their construction not so much on the basis of their physical impracticality as upon their astronomical financial cost and the tax burden they would impose upon the **national** citizenry.

If these relatively minor projects, limited in scope and in the area they would benefit, are monetarily too hot to handle, it appears obvious that an overall solution lies beyond the sphere of a price economy. Such is indeed the case.

Rivers, lakes, underground reservoirs, and seacoasts are no respecters of boundary lines—national or otherwise—so that any workable solution must completely disregard such political interferences. The land area enveloping the water resources concerned —in our case the North American Continent—must be considered as one integral operating unit. The sovereignty of national and lesser boundary lines probably proposed another, though unmentioned, stumbling block to Carhart in his search for an answer.

Technocracy's concept for a Continent is unfettered by such modern mythologies in respect to author Carhart's problem and all other physical operations. With the Price System abandoned and the question of monetary cost no longer involved, the construction of a Continental Hydrology can be proceeded with on a straight physical basis. Its design is too lengthy to be described here more than briefly, but for the readers' benefit we shall conclude with a

brief quote from the official Technocracy leaflet, 'A Continental Hydrology':

'The lakes and rivers of the North American Continent are so situated that they provide the greatest opportunity existing on the face of the globe today for the application of a technological control of a Continental hydrology. It is possible to institute on this Continent a hydrology that will provide more miles of water transportation than the rest of the river highways of the world. It would make possible a tremendous development of hydroelectric power, considerably increasing all known engineering estimates of possible hydroelectric power production. It would introduce climate changes, increase local precipitation, and raise the water table over large areas, rendering possible the reclamation of waste lands and the prevention of desert growth. It would create lakes of large volume in areas at present considered arid—such as parts of North Dakota, Montana, Saskatchewan and Alberta; it would render possible the transportation of bulk material at an energy cost of one-tenth per ton mile of that of railroad freight haulage; from areas at present inaccessible to future areas of fabrication and use.

'Technocracy invites the engineers and technologists of America to examine the outline of its proposed Continental Hydrology System.'

Copies of this descriptive leaflet together with further information may be obtained at any Section or Unit Headquarters of Technocracy Inc. The Organization's regularly held Study Classes at all points also study the Continental Hydroloy in greater detail.

You are invited to attend these Study Classes if you wish to learn the solution to the water problem and to all other phases of the operation of the physical equipment of this Continent.

—Rupert N. Urquhart

★ ATLANTIC CITY, N.J.—Gordon Dean has announced successful demonstration of atomic 'breeding' a process expected ultimately to multiply the world's nuclear fuel resources more than 100 times.

Dean, chairman of the Atomic Energy Commission, announced what he called this 'new milestone' in man's conquest of the atom at the annual meeting of the Edison Electric institute here. *—United Press*

Danger Signals

We have the food and there's more where it came from but how to get it to those who need it—that's the problem that stumps the Price System experts. So they propose to solve the dilemma of plenty by reducing production, thus creating an artificial scarcity.

THE United States is producing more food than is good for it —more than it can consume and more than it can export. This fact is the biggest headache of the new Republican department of agriculture. They are being kept awake at night by mounting surpluses. As most Canadians know, the U.S. Government supports farm prices through a body known as the Commodity Credit Corporation which steps in when prices drop below a certain level and either buys outright or makes advances to the farmer. At the end of May the C.C.C. had acquired stocks valued at over $1,700,000,000 and had distributed in addition $2,000,000,000 in advances and purchase agreements. By the end of the current year it is estimated that commitments may have risen to near $5,000,000,000.

This is a large sum of money even in the United States where huge figures are the rule. It poses a real problem for the new administration and its secretary of agriculture, Mr. Benson. He proposes to deal with it in two ways: (1) by reducing drastically the level of support prices thus discouraging production, and (2) by enforcing a substantial cut in acreage sown to crops in surplus.

Here we have a situation which should give pause not only to the Americans but to the whole free world. For surely it affords the most disturbing and distressing proof of the complete bankruptcy of our economic system.

There is no disagreement whatever that the most crying need of the West is more food. It would be wearisome repetition to quote the pronouncements of the Food and Agriculture Organization and other authorities, showing that more than half of the people on the outside of the Iron Curtain are always hungry—never get a decent meal. On the radio every

Reprinted from WESTERN PRODUCER

day our hearts are wrung by appeals for donations of scraps of food to feed the starving. At the same time the farmers of the United States have demonstrated what they and farmers elsewhere can do when given adequate stimulus. They can produce food in such abundance that it becomes a problem to find storage space for it. Then what happens? Well we see it actually happening right now in the United States. Instead of welcoming the abundance as a God-given respite for the starving multitudes, a frantic effort is made to cut back production. We have the food and there's more where it came from but how to get it to those who need it—that's the problem that stumps the experts. So, may God forgive us, we are proposing to solve the problem of abundance by reducing production, thus creating an artificial scarcity. What more devastating indictment of our economic system could even its most fanatical critic conceive?

Let no one run away with the idea that this is a matter which chiefly affects the Americans or that they are primarily responsible. It is the legitimate progeny of the economic system under which the free world operates and, as any informed observer could have foreseen, was bound to happen. And let not Canadians deceive themselves with the comforting illusion that it can't happen here. It can. The sooner we face that fact the better will we be prepared to deal with it.

Let us look this thing straight in the face. Here is a quotation from an editorial in **The New York Times** dealing specifically with wheat:

'It (the surplus) is the result of a succession of years in which under the government's farm policy, the wheat farmer has been encouraged to produce, regardless of the dimensions of his prospective market, in the comforting knowledge that if he couldn't sell his produce anywhere else the benign government stood ready at all times to take it off his hands at a price that would be profitable. Monday's break in wheat prices was but one of many pieces of evidence to come to hand of late that the so-called "policy" is rapidly catching up on us as a nation.'

There, we shall doubtless be told, is the realistic view. What then does it mean? It means that all the flights of oratory pleading

for the production of food to feed the hungry and strengthen the West have been just so much bunkum. The Americans stumbled on a way to produce food and what's their reward? They are frightened by their success. They are scared that they will be bankrupt by abundance. They are once again confronted with the fact that they are living under an economy of scarcity. As soon as they produce a surplus that system will not work so they must set about creating artificial scarcity—with all possible speed lest they be smothered under the weight of their own surpluses.

Readers of these columns may be tired of our repeated warnings that nothing has been done since the thirties to change in any important degree the system that produced the depression of that decade. Here surely is proof of the truth of that contention. How far is the United States from the mad policies of the thirties when corn and cotton were plowed under, young pigs were killed, crops burned and bonuses paid for reduced acreage? Not very far and Canada may be only a jump or two behind.

It would be a tragic mistake to run away with the idea that these matters interest only one country or affect only the farmers — that the problem is not of major proportions, and, anyway, is only temporary. In plain truth it is one of the principal symptoms of the disease that is killing civilization. For if civilization should perish and freedom die it will be because of the rot within it. The average man does not take fire from eloquent exhortations that it is his duty to defend 'our way of life' with his own life if necessary. Wrongly, no doubt, having enjoyed free institutions all his life he takes them for granted like the air he breathes. He judges the value of 'our way of life' by its economic performance and because he has himself, in so many instances, experienced the corroding effect of poverty in the midst of plenty, he judges that it has been a miserable failure. What is happening in the United States and threatening elsewhere confirms his verdict and proves that nothing has been added since the thirties. When the response of the greatest food raising region in the world to the piteous cries of the starving millions is a drastic cut in production who can blame him? In his

opinion an economic system which allows itself to be forced into that position is not worth saving and deserves to perish.

If communism should capture the whole world it will not be as the result of a third world war. It will be because the democratic system has failed and because, as a consequence, the people do not believe it is worth defending. One factor which will drive them to this conclusion is the breakdown of the economic system, its inability to distribute the goods and services which modern scientific achievements have made available; the fact, in short, that it functions successfully only under conditions of scarcity and that we seem to have neither the wit nor the will to reshape it to fit this age of abundance.

★ MONTREAL.—Any day now Canadians will be able to buy houses without light switches, heat them with a Buck Rogers gadget and get their cars safely out of the garage by pushing a button, an electronics expert said.

It probably won't cost much more than to get the house wired for ordinary lights and an electric stove.

The electronic-age word of what's in store for Canadians who have the money and imagination came from Lucien Dupuis, Quebec provincial president of the electronics section of the Corporation of Master Electricians, which opened its third annual convention here.

'People don't realize that we're in the electronics age now,' Dupuis said in an interview. 'They think talk about electronics is far-fetched for civilian use and is the job of the military.

'They're all wrong.'

Dupuis, who runs a booming electronic business and says he is a pioneer in the field in eastern Canada, claimed it wouldn't be long before push-button garages and cars that back out by themselves are accepted as commonplace in this country.

'They've got 'em in Hollywood and — although few people know it — they have several such devices already installed in Quebec and Ontario,' Dupluis said.

One gadget, for example, turns on the lights when the sun goes down. It turns them on at lower power at dusk and boosts the power as it gets darker.

—British United Press

★ NEW YORK.—Corn cobs and oat hulls supply raw material for a promising new family of drugs against human and animal diseases.

These drugs are nitrofurans, made from furfural, a farm waste product. Furfural also helps make nylon stockings and other products.

One nitrofuran looks promising against kidney and bladder infections not touched by antibiotics. Another, put into chewing gum used after meals, is credited in early tests with reducing tooth decay.

Still other forms are helpful against infected wounds, burns, ulcers of the skin, eye and ear infections and some fungus diseases. The furfural drug also is becoming a weapon against a serious poultry disease, coccidiosis. *—Associated Press*

Push-Button Age

Paralleling closely Technocracy's findings, Columnist Jack Scott says that one of these days people are going to have the fact the fact that the Push-Button Age is finally upon us. He cites a number of examples of approaching full automaticity which will be familiar to Technocrats.

ONE of these days—maybe next Thursday—we're going to have to face the fact that the Push-Button Age is finally upon us.

There'll be a knock on your door some sunny morning, you'll open it, whistling a thin little tune, all unsuspecting, and there it'll be: the Fuller Brush Robot, guided to your portal by radar, speaking with a recorded voice and obeying the impulse of an electronic brain.

Fantastic?

I thought so, too, until I began collecting the odd bits of evidence, airily treated as trivia by the daily press, which portend—as they always say in pieces of this kind—man's final mastery of —or capitulation to The Machine.

They are mostly small, one-paragraph stories tucked between the ads for bile beans and corn plasters, but they add up to a new mode of living.

We are now so close to this new era that the engineers are already talking contemptuously about the 'old-fashioned robot.'

That was the ungainly, metallic beast, fashioned whimsically in the crude image of man, whose most dramatic achievement was the ability to conquer a human opponent at checkers.

Others were equipped with 'magic eyes' or a 'brain' obedient to the impulse of light or sound waves to motivate it.

These were the oafs of the electronic age in its Neanderthal period. Today the robot is a little black box which will operate entire factories with the assistance of the index finger of one human being.

Item: Down in Charlestown, West Virginia, a 'mechanical miner,' operated by remote control, is taking out two tons of coal a minute untouched by human hand.

Item: The firm which invented a convertible top that would come

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Reprinted from VANCOUVER SUN

up automatically at the first drop of rain has now perfected a robot which will close or open the windows of an entire office building to suit the weather.

Item: Some Super-Markets in the United States have installed a robot which counts returned empty bottles, calculates the amount of credit, gives the customer a credit slip.

Item: A robot is on the market which will pluck chickens clean as a whistle and in Toronto the Canadian Restaurant Association delegates at their convention were shown a push-button robot which serves coffee either black or with cream or sugar, all by the touch of a finger.

Item: A mathematical robot called 'Elecom 100' will accept any problem from figuring out your income tax to testing the performance of a guided missile and hand you the answer before you can say 'Buck Rogers.'

Those items—and hardly a day passes without one or more—seem to me the brightest and most promising news in the paper.

I agree with Norbert Wiener, a professor at Massachusetts Tech who spoke recently of the second industrial revolution—the revolution of the robot—and prophesied that, when the machine takes over, mankind will enter a golden age of abundance, culture and leisure.

Why not? Anything a machine can do is drudgery and a waste of time and effort. Every man or woman freed from the tedium of plucking a chicken or digging coal or counting pop bottles or making coffee or figuring income tax has just that much more time for the brief adventure of living.

We've come a long way already in freeing the human mind and body for something more noble than menial toil. The Truck-Trailer Association dramatized that the other day. In 1586 it took 900 laborers, working a 15-hour day for 91 days to move a 350-ton Egyptian obelisk across Rome. Today with modern equipment, the association said, it would take five men less than an hour.

It is a heady thought, too, to contemplate the war of the Electronic Era, fought in the high blue between pilotless, bloodless robots produced in factories containing not a single soul, manufactured from the earth's metals, untouched by human hand.

—Jack Scott

Betrayal at Hell's Canyon

In 1933 the Grand Coulee horse was not traded for the Kettle Falls rabbit. This year, however, a new standard in swaps has been established. The Hell's Canyon elephant evidently is to be bartered for the Idaho Power mouse.

GRAND Coulee Dam stirs the pride of nearly every American. The greatest edifice ever reared by man, it towers athwart the upper Columbia River like a fortress. But it is more than mere masonry. In its twin powerhouses are generated 1,373,000 kilowatts of electricity. Another 651,000 kilowatts are added to the capacity of dams farther downstream by water impounded back of Grand Coulee's lofty parapet.

Yet there was a time, a generation ago, that Grand Coulee nearly was blocked forever. A utility company wanted to erect a small dam at Kettle Falls on the Columbia, above the Coulee site. This would have foreclosed construction of the high dam, for it then would have flooded the works at Kettle Falls.

But far-sighted men in the region prevented this short-changing of the Northwest's future. They refused to trade 2,024,000 kilowatts for approximately 500,000 kilowatts. Why leave three-fourths of a fertile field fallow? Who would use only a fraction of a magnificent waterpower site?

A similar dilemma confronts the Northwest today, but this time the region's destiny will be jettisoned. A pigmy view of the next decade has prevailed.

Both the Bureau of Reclamation and the Corps of Army Engineers have proposed building a huge dam in the mile-deep slot of Hell's Canyon on the Snake River, principal tributary of the Columbia. The Idaho Power Company has suggested, instead, three smaller projects along the same general section of the Snake. When the company filed an application with the Federal Power Commission in 1952, Secretary of the Interior Oscar L. Chapman intervened in opposition. He said granting of the company's application would block the high dam in Hell's Canyon.

Reprinted from THE PROGRESSIVE

But now the Interior Department has a new Secretary, former Gov. Douglas McKay of Oregon. He has formally withdrawn the objections presented by his predecessor. The way now is clear for approval of the Idaho Power Company plan. This plan will be to the big dam in Hell's Canyon what acceptance of the Kettle Falls application might have been to Grand Coulee in the 1930's — the ax, the end, **finis.**

Writing in the Denver **Post**, Robert W. Lucas has pointed out that Hell's Canyon Dam would have an installed capacity of 900,000 kilowatts, while the three Idaho Power dams would have a capacity of 783,000 kilowatts. And Lucas added:

'Nor will the smaller dams be able to contribute more than a fraction of the downstream supplemental water for turning generator wheels that will spin out at least 400,000 more kilowatts with the push from Hell's Canyon storage, released when most needed.'

In late summer, snowbanks in the Canadian Rockies and Grand Tetons are depleted. Rivers run low. Production of power ebbs at such downstream dams as Bonneville and McNary. But the 750-foot dam in Hell's Canyon, wedged between precipitous abutments of lava rock, would form a natural reservoir storing 3,800,000 acre-feet of water. This flow could be poured through the Hell's Canyon spillways, to fill dry penstocks at dams on the lower Columbia.

Once the Idaho Power dams are built, the Hell's Canyon site — considered by Army Engineers to be one of the finest damsites in America—is perpetually lost, for the high dam then would flood out the company structures.

In 1933 the Grand Coulee horse was not traded for the Kettle Falls rabbit. This year, however, a new standard in swaps has been established. The Hell's Canyon elephant evidently is to be bartered for the Idaho Power mouse.

Hydroelectric energy from the impressive dams on the Columbia River system has fostered a mighty aluminum industry, it has made feasible 50,000 planes a year to ward off potential aggression, and it has stoked furnaces for the Hanford Works, where plutonium-235 for the atomic bomb undergoes its final processing.

But now, for the first time, the U.S. government has announced,

through the Department of the Interior, that it will be satisfied with substantially less than total development of the Columbia and its foaming tributaries, as they course majestically to the sea. The sun has set early this season.

—Richard L. Neuberger

TECHNOCRACY'S COMMENT: Although the proposed government high dam on the Snake River at Hell's Canyon is far superior to the series of small dams proposed by Free Enterprise, it is still a political compromise and falls short of Technocracy's proposal for the development of the Snake River between Lewiston and Weiser, Idaho, as a detail of our Continental Hydrology system.

Between Lewiston with a water elevation of about 700 feet and Weiser with an elevation of about 2100 feet, there is a drop of nearly 1400 feet. Hell's Canyon, through which the river flows along this stretch, is one of the deepest canyons in the world. Besides serving as a huge water-storage basin, it could be used as a major transportation artery for low-cost water haulage, as a source of hydro-electric power, and as a public recreational area. As a transportation artery, it would connect with secondary waterways extending to the headwaters of the Snake River and connect with tributary waterways of the Colorado and Missouri River systems as well as with Great Salt Lake.

In Technocracy's Continental Hydrology plan, there would be a low dam near Lewiston, to back the water up to the lower end of Hell's Canyon; then, there would be the alternative choice of building one high dam, raising the water up to 2100 feet, or a tandem series of lesser dams of 300 or 400 feet each. In either event, there would be a series of five huge lift-locks for raising and lowering the waterways shipping through the vertical distance of 1400 feet, about 300 feet to the unit.

Neither Free Enterprise nor Party Politics is capable of designing and executing a Waterways Program that is adequate for this Continent.

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the membe. to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada. and in addition there are members in Alaska Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Technocracy is the most forceful and dramatic proposal for economic planning that has ever arisen in the United States.

—**Prof. John W. McConnell of New York University**

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TECHNOCRACY DIGEST

Nov. '53

A New Strategy for Labor

Distribution Know-How

The Spirit of Adventure

White Man's Headache

Neither Poverty Nor Riches

The Peace Scare

World's First Mechanical Cow

The Automatic Factory

No. 150

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TECHNOCRACY INC

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

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The Quarterly Survey

Capacity to Produce

U.S. industry's capacity to produce goods is catching up with national demand, according to the replies of executives of 159 manufacturing companies co-operating in a survey recently completed by the National Industrial Conference Board.

Three out of four companies indicate that capacity and demand of their major product lines are substantially in balance and many claim that they now have some surplus capacity. Only 7% report current demand still in excess of the industry's capacity to produce.

Approximately 13% of reporting companies expect that some capacity in their industries will be retired in the foreseeable future —primarily marginal plants which will be abandoned whenever demand no longer justifies their continued operation.

New Potato Harvester

A revolutionary potato harvester, called the Shotbolt, has been developed by a British manufacturer. Chief feature of the harvester is a method known as aqueous suspension, which automatically separates potatoes from clods and stones.

The tractor driver is the only operator required, and the makers claim that the machine will cover 3 to 3½ acres a day and that no skinning or cutting will result on normal potatoes.

The potatoes are dug in the normal manner of chain type diggers, and any of the standard type of digging shares may be used.

Time and Tide—and Science

Justus in The Minneapolis Star

Depth can be controlled by a screw adjustment while the harvester is on the move.

Potatoes, clods, stones and haulm come over a rod-link chain and pass through an air stream maintained by a fan on the front of the machine. Potatoes, clods and stones drop into a tank containing a suspension of earth in water with a specific gravity above that of the potatoes, which float; the clods and stones sink.

Potatoes are next sprayed with clean water as they travel by conveyor to a trailer drawn alongside. This cleans the potatoes and at the same time maintains correct density of the suspension in the tank. Clods and stones are removed by a rod-link elevator and deposited on the ground.

U.S. Farm Crisis

American agricultural surpluses keep mounting up. As of June 30, the Commodity Credit Corporation held $3.5 billion worth of farm products under the government's price support program —almost two and a half times the total at the same time last year.

A decline in three of the four most important export commodities accounted for the over-all decrease of 31% in the year ended June 30. Wheat exports dropped 36%, cotton 52% and tobacco 13%.

Paper Work Fetish

Paper work is a fetish of the modern North American Price System. A report just issued by Leahy & Co., New York management consultant firm, reveals how strong the fetish has grown.

U.S. business is adding about 15% a year to the existing hoard of business records, which Leahy estimates at one-and-one-quarter trillion pieces of paper.

Justus in The Minneapolis Star

At Last—The Perfect Security Risk

Paper work now claims as many workers as agriculture, counts one office worker for each two factory workers. The ratio 30 years ago was one office worker to four factory workers.

More than half of all employees in banks and insurance companies shuffle papers, rather than procure new business.

In the textile industry, more than a quarter of all employees are office workers.

Consumer Credit Up

Increasing their purchases of automobiles and other goods, Canadians have plunged deeper into debt, with the total consumer credit bill rising to a new high of $1,732,000,000 in the first half of 1953.

This jump of more than $500,000,000 over a 12-month period was propelled mainly by a sharp rise in installment buying which swelled to $759,000,000 on June 30—an expansion of $358,000,000 from $401,000,000 last year, a Bank of Canada survey showed recently.

The big increase in the debt is caused mainly by the jump in automobile sales. They rose to 292,100 units last year, up from 275,700 in 1951. The portion purchased through a financing plan rose to 42.8% from 29.6.

The installment credit survey showed the debt in retail stores had increased to $210,000,000 from $136,000,000 and in finance companies to $459,000,000 from $427,000,000.

Total personal cash loans through banks and other lending institutions jumped to $526,000,000 from $479,000,000 last year.

★ TORONTO.—Atomic power will create electricity for industry within 10 years, Dr. David A. Keys, head of Canada's Chalk River atomic energy project, told a convention of the Institute of Power Engineers here.

At the same time, he criticized existing use of coal to produce heat and power, on the grounds that 'coal contains useful chemicals.'

This country's entire electrical needs for a year could be supplied by 2½ tons of uranium, Dr. Keys said. —*Canadian Press*

★ WINNIPEG.—A world-wide economic slowdown during the next six to eight months was predicted here at a conference of credit men.

Henry H. Heimann of New York, executive vice-president of the National Association of Credit Men, added that Canada, sound as her future is, would feel the decline along with the rest of the world. —*Canadian Press*

A New Strategy for Labor

Labor is the largest organized body of citizens on the North American Continent. It has the numbers and the organization to spearhead social change. It also has the incentive—if it can view the problem strategically instead of merely tactically.

THROUGHOUT all human societies, up until almost yesterday, the provision of goods and services was accomplished mainly with the energy of human muscles. The processes of applying this human energy had little appeal, as such, to human beings, for most of the work was irksome, monotonous, and fatiguing. Consequently, in order to get any sizable quantity of work done, it was necessary for the masters of production to impress other human beings into the labor forces—as chattel slaves, as indentured servants, or as low-paid hirelings. It developed that these workers became the lowest and most despised of the social classes. They were permitted to participate in the benefits of their production only enough to sustain life and energy during a few years of their lives, then they were permitted to die of neglect, malnutrition, or disease. Human workers were regarded by their masters as nothing more than energy-producing devices, expendable when no longer capable of profitable energy output.

In order to sustain a degree of morale among the human work engines, above that of hunger and the whip, it became expedient to invent the Morality of Toil. Work became ballyhooed as a virtue and idleness as a sin. This was given further enforcement by ecclesiastical decrees and implications to the effect that you could work your way into heaven and loaf your way into hell. (Of course, in the hereafter, work was to assume its proper recognition; for, in heaven, the Select would be rewarded with perpetual leisure and, in hell, the Condemned would be punished with everlasting toil.)

Members of the Upper Class of all societies looked with disdain upon work and those who worked. They would even cast wide-eyed, questioning looks at any-

one of their own class who dared to sully himself with productive endeavors; however, it was expected that all members of the Upper Class acquire a position in the social order and perform a routine of activities in keeping with Upper Class traditions. The only proper activities of the Upper Class members were those associated with the instigation and waging of war, with intrigue, with sports, with regulating other human beings, and with showing themselves off with dramatic effect. The priestly branch of the Upper Class could also assume the role of intermediary between the prevailing deities and the lower classes—usually to the sorrow of the lower classes, although this sorrow was relieved somewhat with souffled promises of Upper Class privileges in the hereafter for the obedient toilers.

Thus, through force, guile, and the demands of survival, the lower classes were kept in the category of work-engines at a minimum of cost to the Upper Class. Even so, this condition could not have been sustained if the 'minds' of the lower classes had not also been captured and enslaved by the Upper Class. The human work-engines were induced to believe that toil was good for them, that it was honorable, and that it would be rewarded. The workers themselves were recruited to serve as gestapo for the Upper Class, to spy on each other and report or punish those of their own number who rebelled against hard work, low pay, and the status of third-class membership in the social order. Should a member of the lower class seek a direct path to leisure by simply not working, his fellow members would cast disdain upon him and label him with such epithets as 'loafer,' 'bum,' 'no good,' 'idler,' 'gold-bricker.' Leisure was proper only for the Upper Class.

Since the lower classes were socially 'undeserving,' it was improper for them to have any pleasure in life. Although the sabbath —more or less free from work— was enforced as a means of recharging the muscles of the human work-engines with more energy, it was also used to impress upon them that pleasure was wicked. And in other ways, the sabbath was made as boring and restrictive as possible with 'blue laws,' closing of stores and recreational centers, and compul-

sions to assemble and listen to preaching about sin. It has always been an irritation to the Upper Class that the lower classes should be able to get as much enjoyment out of fornication as themselves—'it's too good for the blighters, you know.'

During the past 150 years, most of the chattel slavery of the world has become out-moded, with only a few remnants persisting in backward, fascistic societies, such as Saudi-Arabia. Otherwise, it prevails, in modified forms and under other names, only in penal institutions, religious orders, and the armed forces. The freeing of the slaves came about, not from increased respect for the dignity of man, nor from moral revulsion against the idea, but because science and technology had provided more efficient and less costly engines to do the work. No human slave, no matter how strong and efficient, could compete on a cost-accounting basis with an engine operated by extraneous energy. It was only when practical engines, using coal, oil, gas, or electricity as the source of energy, came into use that reforms against the 72- and 84-hour work-weeks could be considered as socially feasible or desirable.

So effective has been the replacement of human toil with technological devices that, today on this Continent, less than two per cent of the energy used in the manufacturing industries is derived from human muscles, while previously some 98 per cent was contributed by the human work animal. No industrial manager, who is conscious of production costs, would consider the use of human labor when he could have a non-human device installed to do the work. As a consequence, the day of the factory without men is dawning. At long last, the human being is due to be liberated from toil and from working for a living. Along with it, class distinctions will disappear—there will be only one social class.

Unfortunately, Upper Class and Lower Class concepts still prevail in our society as undiscarded debris from the past; and they are responsible for much of the turmoil in this day of rapid social change. There are still those who think they are 'better' than other people; that they deserve more than others and that it should come to them with less effort on their part, or no effort at all; that

others should serve them and do their bidding without hope of reward or special recognition. These are people with Upper Class concepts. They despise the way of life of the great majority but they would do nothing to alleviate it —rather they would resist and resent anyone else's doing anything to alleviate it. They want the status quo to continue and they want to be on top and be recognized as important, and they want to lead and command. They want the majority to remain inferior and be their obedient subjects.

There is a distinct difference between a commander and a director. A **commander** is one who regards himself as a Leader and considers himself superior to other people, who by rights should be his followers. He feels that these followers should act on his orders without explanations given or questions asked. He feels that it is his right to order others to do that which he would not or could not do himself; and he is prepared to judge them harshly if they refuse or fail. On the other hand, a **director** functions as a coordinator of people and things toward the achievement of some specific goal. He recognizes that the requirements of the job and not his personal whims must dictate what is to be done, when, and how. He realizes that his function depends on his knowing what is to be done and on his making correct decisions most of the time. He is not above doing any of the jobs that come under his direction if called upon to do so. However, if a particular job is beyond his capacity or training, he may ask (not order) others to do it—with respectful deference to their superior ability. The director functions on the basis of ability while the commander issues orders on the basis of authority, with or without ability.

Much of the irksomeness of work comes from having to follow orders from those who would not condescend to do that which they order others to do. This is magnified when the one who gives the orders lacks the ability or knowledge to give competent direction or make correct decisions. This condition is, and has been, a major source of grievance among workers (as well as men in the armed forces); for, too often, men are put in charge of a job because of factors other than their ability to direct that job.

Worse than that, the incompetent overseer or executive manager receives more rewards and more special recognition than do those who perform the work and get the job done.

It has been demonstrated that the highest morale and enthusiasms for doing a job is manifest when all persons connected with it receive the same remuneration and accommodations, regardless of the function performed, and when the direction of it is in charge of someone whose knowledge and capacity are such as to win the respect and cooperation of they who must do the 'lesser' tasks. Morale is at its lowest when a job is under the command of one who regards himself superior to those he commands, who receives higher rewards for his services, and who gives too many wrong orders. Almost as bad, but in another way, is the manager who is consistently indecisive or lackadaisical in his directions. The efficient and respected director is one who can set a pace that is fast enough to be stimulating without its being exhausting.

Workers, through the centuries, have been handicapped with bossism from those with Upper Class concepts and social disdain for the work they did, along with a minimum return for the effort expended. The laborer has never been regarded as a decent, respectable citizen of the society in which he lived. The respect, as well as most of the wealth produced, went to the parasitical Upper Class.

In order for there to be a wealthy leisure class in the age of human toil and hand tools, it was necessary that some ninety-five per cent of the people belong to the underprivileged working class and that most of their produce go to support the luxury, ostentation, and waste of the Upper Class. To regard all citizens as social equals and to have an equitable distribution of the social wealth was contrary to the social traditions of the age of barbarism. Today, the same thing is contrary to the institutions and upholders of fascism—the ultimate stage in the progression of barbarism. Under a system of equality, there would have been no wealthy Upper Class, neither would there have been the degraded poverty, misery, and superstitions of a toiling lower class.

Had there been an equal divi-

sion of the human effort required in the operation of the societies of the past, with an equitable sharing of the produce of the social area, there would not have been the general resistance to social change that has prevailed. For, there would have been no incentive to maintain the status quo or to do things the hard way instead of the easy way merely to employ more man-hours of human effort. Rather, there would have been a steady progression toward more production with less expenditure of human time and energy. The replacement of human energy by extraneous energy would have been a social blessing to all instead of a calamity to those who were disemployed. There would have been no curtailment of production or destruction of 'surpluses' because of unprofitable marketing conditions. Goods and services would have been provided to serve human needs as the first consideration rather than for sale or exchange. Of course, the Price System would have had to be discarded, for it provides the incentives and techniques of barbarism at its worst.

However, in spite of the overwhelming opposition to change, technology came into widespread use, particularly in North America—where traditions were less firmly established, where there were more readily available resources, and where there was a rapidly expanding economy. This progression was accelerated at intervals by wartime demands for more production with fewer man-hours. The time has now arrived when there is no working class in North America, viewed in the old sense. The hours of work have been more than halved and extraneous energy does most of the actual work. The worker is not subject to the lash of a whip in the hands of a sadistic boss as a means of goading him into putting forth more effort. The human being has become merely an operator or overseer of a machine, but does little of the strenuous work himself.

The amount of human labor required in the production of some unit in a modern manufacturing plant is so small that it is possible to pay the worker high wages without materially increasing the cost of production. For example, in a modern automobile plant, the number of man-hours required to produce a standard automobile is

so small that it would make little difference in the cost of producing an automobile whether the worker were paid fifty cents an hour or three dollars an hour.

As a consequence of applied technology under the Price System, the profits of the industrialists are the highest in history. Instead of the reduced cost of production being passed on to the consumers, like it states in the propaganda advertisements of big business, the markup in the price is increased, both in actual figures and in percentages, so that, as the cost of production goes down, the price charged the consumer goes up. Thus, the discrepancy between the purchasing power paid to the consumers and the sale price of the goods produced becomes ever wider and the Price System becomes increasingly more untenable.

Temporarily, the American economy has enjoyed a prosperity binge. But this has not been due to any 'advantages' of private corporate enterprise or the blessings of political compromise. It has been due, in the first place, to the high productive capacity of our installed technology and, secondly, to a huge expansion of debt, which, for a while, has permitted the public to buy unprecedented amounts of goods at the same time huge surpluses were slopped around the world in a prodigal manner (to support a pro-fascist policy of social reactionism but, inadvertently, fomenting more revolution than all the revolutionary ideologies combined).

Labor, as a majority segment of the population, is fast disappearing. The statistical number of jobholders in the United States is increasing, in numbers if not percentages, primarily because of increasing population, fewer work hours per week, and the additions of new categories of 'workers' to the statistical tables. People must have incomes in order to survive and the social system must provide those incomes as a hedge against social revolution. In the final analysis, this is financed by government credit and expanding debt. But this make-work policy, at best, is a temporary palliative for the United States and Canada.

The places in the world where American produce can be dumped and destroyed are becoming restricted, particularly since other countries with the aid of modern

technology also are producing surpluses for which they seek dumping grounds. The need for dumping must be serious, indeed, when the United States seeks out such unsavory characters as Franco, Adenauer, Chiang, and Rhee as beneficiaries of our largesse. On top of that, the North American consumers are being pushed into debt to the limit of their credit, and then some.

The future of Labor does not lie in its status as a working class. The future of Labor is tied in with the future of all North American citizens and, for the first time in history, the worker is due to become a first class citizen of his society. American technology is so far developed that, if it is to be operated continuously, the production will provide abundance for all the inhabitants of the Continent. Thus, a fraction of the people working at constructive employment will be able to produce an abundance for all. It would be folly to suppose that this fraction will submit to a second class status and an artificial scarcity while the rest of the population enjoy abundance and leisure.

There is no future for Labor as a separate branch of society, competing with the financial managers for a greater share of the profits. The managers have the advantage; they can install labor-displacing machines and reduce labor costs. In the meantime, they may appease Labor temporarily with higher wages and improved working conditions and other benefits; but, soon, they won't have any labor to contend with. The financial managers may lack strategic judgment but, tactically, they are smart in Price System ways. Moreover, when Labor seeks a larger share of the profits, it is operating against the welfare of the consumers in general; for, the extra wages and benefits paid to Labor are merely added onto the cost of production and the price of the produce is marked up accordingly.

Labor is the largest organized body of citizens on the North American Continent. It has the numbers and the organization to spearhead social change. It also has the incentive—if it can view the problem strategically instead of merely tactically.

The primary desire of every member of a labor union is to obtain a higher standard of living

with less effort. This can be achieved in a very simple way, so far as the overall design is concerned. Strategically it calls for the man-hours of work being divided equally among all able-bodied citizens of the Continent, male and female, with an equitable sharing of the goods and services produced. This would result in an abundance for everyone — all that can be consumed without wanton waste.

Of course, an equal distribution of the social production will not be pleasing to the small minority with Upper Class positions or aspirations and some of them will become rabidly antagonistic to the idea even though there would be abundance for all. It is time that such people were being made unhappy, for a change. The Upper Class has always done little for society that was constructive but a great deal that was destructive. The Upper Class took the lion's share for itself, while those who did the hardest work received the least in the way of physical rewards, and they usually got a kick in the pants to go with it. We contend that the time has arrived for everyone to receive the best and the most that the society can provide and, if that makes anyone unhappy, let him suffer self pity unrestrained. It is time his breed were dying out anyway.

No political system in the world has a strategic design for the production and distribution of abundance—be it communism, socialism, fascism, republicanism, or monarchy (there are no democracies in existence). Only a functional system—one that can integrate the men, the resources, and the technology into one Continentwide social unit—is capable of achieving that goal. Technocracy is the only such system in existence.

Labor has the members and the organization to make Technocracy a reality for the North American Continent at any time it chooses. It cannot deny that the objective is worth while; it cannot plead incapacity; and, in view of the widespread distribution of the membership and literature of Technocracy, it cannot very well plead ignorance. The only excuse Labor can offer for not immediately taking steps to make Technocracy a reality is strategic misdirection by a leadership that is more interested in retaining com-

mand under the status quo than in advancing the social and economic state of its membership.

The program of Technocracy is here and ready for Labor to adopt and install. Technocracy will not install itself. The present membership of Technocracy Inc. cannot and is not organized to install Technocracy. Its function is to promulgate the program of Technocracy, but the installation of Technocracy must be done by a much larger segment of the population. Labor can do the job sooner and more effectively than any other organized body on the Continent. If the present leadership of Labor opposes action in support of Technocracy, either as a matter of selfish motives or from inability to give strategic direction, it is time Labor had a new leadership.

When Labor is ready for a new social order on the North American Continent, Technocracy Inc. stands ready to give whatever information, assistance, and direction that it requires.

The individual member of a labor union can always present Technocracy as a strategic objective for his organization to adopt and promote. He does not have to wait for instructions from 'higher up' to get started. If he meets with resistance from 'higher up,' he can be sure that someone does not want him to have the advantages that Technocracy would provide but prefers to use him as a pawn in a Price System racket. He will know that he has a clean-up job to do. **—Wilton Ivie, CHQ**

★ OXFORD, England.—A top British atomic expert tells how peacetime application of the atom could save untold man-hours of work.

When the principles of atomic energy are not being used to blow up people, they can do everything from separating shale from coal to detecting if a single tablet is missing from a box of aspirins.

Sir John Cockcroft, director of Britain's atomic energy research centre at Harwell, gave these examples in a lecture to production engineers here.

Cockroft said that with the help of gamma rays an automatic ejector could separate coal from shale on the belt conveyor in a mine.

Normally, raw coal is sent out of the mine and the shale, or rock impurities, must be removed by washers. When the raw coal is placed on an upward current of water of a certain velocity, the coal particles are carried upwards, but the shale, being heavier, descends.

Cockroft explained that experiments with thulium, a radio-active material, showed that pure coal reflected back 25% more radiation than shale. This difference, he said, could form the principle of an automatic ejector. *—Reuters*

Distribution Know-How

Excerpts from an address delivered by Walter Reuther, president of the American CIO labor unions, at Vancouver on October 15, 1953. Reuther said that what we need today is to develop our distribution know-how, the same as we developed our production know-how.

OUR problem is that we have got the tools of abundance on the production end, but we haven't got the tools of distribution to balance the tools of abundance on the distribution end.

In 1929 we got into trouble in the United States and in Canada. Why? Some of the economists said we had over-production, but we didn't have over-production. We were the only countries in the world where people went hungry because they said there was too much to eat.

We were the only country in the world where the New England shoemakers' kids went barefoot because their fathers made too many shoes.

In Asia they are old-fashioned. In Asia they are so old-fashioned that they only know how to go hungry when there is not enough to eat. But we are very smart, we have raised western civilization to its highest levels of achievement. We have made so much progress that we are smart enough to know how to go hungry when there is too much to eat, and you have got to be very smart to be able to do that. But that is exactly what we did in 1929.

But you see, we got in trouble in '29 because what we had in 1929 was a Cadillac production machine, an eight-cylinder job. It wasn't a bad machine. But we had a model-T distribution machine, and the old model-T wouldn't keep up with the Cadillac, and that's why we got in trouble.

What have we got in 1953? We haven't got a Cadillac production machine. In 1953 the United States alone will turn out around $270 billion in goods and services. . . . What we have today is not a Cadillac production machine, we have got a high-octane supersonic jet job, and we had better get a distribution machine that will stay abreast of the production machine or we will get in trouble all over again. . . .

Our problem is the fact that science and technology have given us wonderful tools of production, tools with which for the first time in the history of human civilization we can conquer poverty and hunger and ignorance and disease and man's ancient enemies.

But what we need to do is develop our distribution know-how, the same as we developed our production know-how.

One of the problems is that too many people believe in what they call the trickle-down theory of economics, the theory that if you have a banquet table and you load that banquet table with more and more of the good things of life, for a few wealthy people on top, they will brush enough crumbs off the table for the people down below.

That theory is wrong. You can only build prosperity not from the top down, but from the bottom up, by giving the great mass of people enough purchasing power to buy the things we know how to produce in our factories, in our mills, and grow on our farms.

What we need to do is to find a way to broaden the purchasing power base of our economic system so that the purchasing power in the hands of people will balance our productive power in terms of these new tools that we are finding and science and technology is giving us every day in the year. **—Walter Reuther**

★ TORONTO.—Scientists at the University of Toronto are bouncing shock waves off the wall of a tiny test tube trying to come up with a new ignition system which could revolutionize the engine manufacturing industry.

In co-operation with the Ford Motor Co. research department at Dearborn, Mich., the experts are working to produce an ignition system operated by shock waves instead of gasoline. It should greatly increase a car's mileage per gallon of gasoline.

Although they expect to work a long time before coming up with the revolutionary system, they predict it might be adapted to turbojets as well as to piston engines for planes. The research is being done at the Institute of Aerophysics which is studying the fundamental characteristics of shock waves.

Using shock waves instead of a spark to ignite fuel in combustion chambers, the researchers have produced temperatures hotter than those of the sun. The intense shock waves are easily generated in tiny test tubes and scientists are hopeful that engines could be fired by shock waves instead of by a spark.

The waves would ignite less combustible fuels than gasoline and the alternative fuels might replace the orthodox gasoline. The experts also say that their supersonic waves will ignite all the fuel simultaneously, which will greatly reduce wastage.

—British United Press

The Spirit of Adventure

The time is at hand for us to prod our dormant pioneering instincts into action and leap the last obstacle separating us from the highest standard of living ever known. Technocrats ask their fellow North Americans to join them in the greatest adventure of all time.

FROM the earliest times up to the present men have yearned to explore the unknown. Unsatisfied with the mundane routine of daily existence they have sought means of escape and so have engaged in countless expeditions in quest of the greener, distant fields beyond their familiar horizons. To this spirit of adventure can be attributed most of the world's geographical discoveries and explorations.

Marco Polo, succumbing to the bite of the adventure bug in the middle of 13th Century, traveled from Venice overland on a trip which took him to Cathay—now known as China— and opened a trade route of centuries' standing between that fabled land and his own. In 1492, convinced that the world was round rather than flat and that consequently China could be reached by sailing westward across the Atlantic Ocean, Christopher Columbus set out on the historic expedition which unexpectedly led to the discovery of the Americas. Thus was opened up vast new areas for exploration by the adventurously inclined mariners and soldiers of fortune from western Europe.

For centuries after this fortunate navigational error, these adventurers and multitudes of others oppressed by the feudal societies of their own countries swarmed to the Americas to establish new homes. By 1776 the settlers of the original Thirteen Colonies along the Atlantic seaboard had so far consolidated their positions that they instituted a successful revolution against their authoritarian overlords abroad and set up a new nation—the United States of America. The British and French colonies farther north retained their allegiance to the Union Jack and subsequently formed the bilingual country of Canada.

There appeared to be virtually limitless opportunities for territorial expansion within these do-

mains which spanned the Continent from the Atlantic to the Pacific and from the Gulf of Mexico northward to the Arctic Ocean, enveloping an area of over seven million square miles. As the eastern regions became more heavily populated, the horizon-seekers turned their eyes to the west and set out in home-steading expeditions across mountains and plains. They faced hardship and death at the hands of hostile Indians, but though impeded they were not stopped and in due course most of them reached the shores of the Pacific Ocean both above and below the 49th parallel of latitude which was established as the national boundary line. By the end of the 19th Century the pioneering era was practically over with most of the habitable areas having been settled. With cities, farmlands, mines, etc., blanketing the whole land, the new youth had to appease its appetite for adventure in other ways. They turned their eyes skyward.

It had been the dream of man for ages to take to the air like birds and fly, but except for a few minor ballon ascensions his efforts had utterly failed. There were in some quarters, of course, violent objections to all attempts to simulate the feathered folk for it was maintained that if we had been intended to fly we would have been so constructed in the first place. Such objections, however, failed to deter the ardent proponents of aerial transportation, so efforts to succeed continued.

The age of aviation actually commenced on December 17, 1903, when Orville Wright flew the first heavier-than-air craft—which he and his brother Wilbur had constructed—a distance of about 120 feet in a 12-second flight. This was enough to convince them of the feasibility of further experiments, and from then on progress in aircraft development was steady and rapid. It had advanced far enough by World War I to be used militarily for the first time—though rather insignificantly.

The first few years following World War I saw nothing outstanding in aviation progress. Many of the war aces persistently kept their medium before the public in barnstorming exhibitions throughout the land thrilling ground audiences with feats of flying skill, while others performed a more useful function as bush

pilots by bringing people in the more remote parts of the Continent closer contact with the outside world. To most people, though, the airplane was considered little more than an adult toy—an interesting diversion to watch and from which to derive a few thrills, but hardly a serious contribution to transportation.

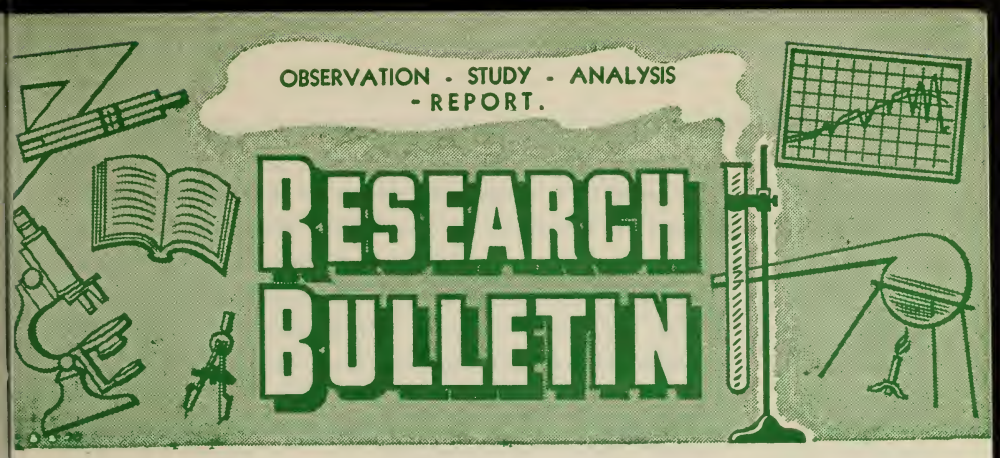
In 1927 an event occurred which captured the public imagination and overnight transformed its attitude toward aviation . . . Col. Charles Lindbergh flying solo in his single-engine 'Spirit of St. Louis' crossed the Atlantic Ocean non-stop from New York to Paris, France. While others had flown across previously, none of their flights had been either solo or non-stop, so Lindbergh's flight stood alone. It advanced aviation from adolescence to adulthood and established it as firmly in modern society as the automobile —itself a relative newcomer.

Today, with airline routes for passenger, mail and even freight service spanning the Continent and connecting North America with other parts of the world, ordinary routine aviation fails to excite the modern youth who must look still further afield to satisfy his lust for adventure. He finds it in his quest for speed . . . speed . . . and more speed on land, on sea and in the air.

Not content with the normal hazards of highway travel in which endless streams of fast-moving traffic moving in opposite directions on congested thoroughfares weave webs of death and destruction, he dreams up even more elaborate ways of taunting the Grim Reaper and dodging his scythe. This accounts for the rush of speedways in practically every city on the Continent on which thrill-thirsty youths test their mettle and the metal of their stock cars and hotrods against like jalopies in furious bursts of speed exceeding 100 miles per hour. Like speeds have been attained by speedboat enthusiasts.

Both of these media, however, fall far short of the speed and thrills common to aviation—even though land speeds exceeding 300 miles per hour have been reached. Pioneers in new techniques of air travel have already flown faster than the speed of sound, and they feel confident that rates over 1000 miles per hour are a not-too-distant future probability.

(*Continued on page* 33)



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The Automatic Factory

THE automatic factory, operated by electronic brains, now is close at hand.

It represents the next big step forward in mass production, the American invention which sometimes has been called United States' greatest contribution to civilization.

In the new kind of factory, human labor will be restricted largely to moving materials from one major operation to another.

The chief developments in the automatic factory idea to date have been in the electronics industry itself for mass production of the seeming infinitely complicated mechanisms which make up the insides of television and radio sets, hearing aids, guided-missile directors and a host of military gadgets, many of which still are on the restricted list. Perhaps the major development has been what the navy calls—with the war-born military fondness for code names—Project Tinkertoy.

It has been a co-operative project of the Navy Bureau of Aeronautics, the Bureau of Standards, and several industrial companies. These latter include the Doughnut Corporation of America, for it so

happens that there is a real relation between the mass production of doughnuts and the mass production of electronic parts. This project has advanced to the point of a large pilot plant in sight of the Pentagon Building operated for the navy by the Willys Motor Co.

Equally significant has been the automatic factory development of the Stanford Research Institute of Leland Stanford University, working under a U.S. air force contract. Both navy and university projects have proceeded along quite similar lines, though entirely independent.

The automatic factory idea has been devoted chiefly to the electronics industry as the field in which the need seemed greatest. It is a new industry, hardly heard of two decades ago. It is vital to national defense.

Its growth in production of purely civilian products has been phenomenal since the war. This production now is at least 50% greater, says the Stanford Institute announcement, than during the wartime peak.

In case of war, navy engineers calculated, the present electronics industry, with its somewhat antiquated methods, could not possibly supply the military demand, the necessary expansions would be slow, and the delay might be disastrous.

Electronic devices themselves are new. The industry, however, had only the old mass-production techniques to fall back upon. These have been considered the ultimate in super-efficiency, but it seems they already are getting a little out of date, considering the potentialities brought about by the advance of science.

When a layman, not especially mechanically minded, looks into the inside of a television set, with its great multiplicity of parts, it seems about the most complicated thing in the world. Up to now these parts, produced by mass production, have largely been fitted together by hand. Many of the operations have been extremely delicate.

They have also, of course, been subject to human errors and affected by the fatigue and boredom of workers. Both the navy and the Stanford automatic techniques make no mistakes, don't get tired,

and the fingers operated by the electronic controls are nimbler than human fingers.

All the patents of the Navy Bureau of Standards process are owned by the government and free to anybody who wants to use them. There is nothing secret involved.

Thus the automatic factory technique should make possible not only a vastly increased rate of defense production, but should materially cheapen civilian electronic devices. The amount of cost production, however, is difficult to calculate.

The initial investment in machinery, for example, will be considerably greater than is necessary for hand operation. Thus, the machinery in the present pilot plant will cost about $5,000,000. Taking this investment into consideration, the bureau of aeronautic engineers calculate a present over-all saving of from 15 to 50% in cost of producing many civilian devices.

Here again, however, the picture becomes highly complicated. For a television set, for example, the major expense is in producing the cabinet and this does not enter into the automatic factory operations.

The possibility of extending the techniques to industries other than the electronic, where the immediate need is not so pressing and which have been geared to other methods, remains to be explored.

—North American Newspaper Alliance

World's First Mechanical Cow

LONDON.—In a quiet room at the Evans Biological Institute at Runcorn, Cheshire, a simple device of steel and glass purrs all day long to churn out a milky fluid which, in future years, may save millions from starvation.

It is the world's first mechanical cow.

From 30 gallons of water, a little sugar and ammonia salts, it makes the equivalent of three gallons of milk a day.

It does the work of glass, as well as of the cow. From the raw

ingredients it turn carbohydrates into proteins and vitamins.

It is the forerunner of future giant commercial plants which, converting cheap and overabundant vegetable material into valuable animal foodstuffs, will step up world meat production.

The achievement of the institute's veterinary superintendent, R. S. Roberts, in solving the problem of carbohydrate-protein conversion on a large scale is one of the most important for years, and scientists are excited about it.

Already a pilot plant is being designed. From the knowledge gained will come commercial giants producing millions of gallons a week.

But, however large the plant, the thing that does the work will still be the same It is a germ, Bacillus Coli.

It lives in the gut of all animals, performing several useful functions, but occasionally getting out of hand, to cause enteric disorders.

Chance led Roberts to it. Chance, plus the skill and imagination to pursue a line of research which was giving 'wrong' results.

A series of calf deaths had followed the use of a B. Coli vaccine. Roberts, starting a new investigation into the germ's toxic properties, began breeding comparatively large quantities of B. Coli to poison his guinea pigs—but they grew fat.

And when they were fed the entire bacterial 'broth'—the toxins plus the pasteurized B. Coli—they thrived even better.

Roberts realized that instead of a poison he had discovered a valuable food containing, as well as protein, several B vitamins, including the recently discovered B-12.

Concentrated, it had the protein content of milk, plus several valuable factors.

The key discovery was of a strain of the bacteria which could be forced to work 10 times faster by aeration.

Then, after testing more than 30 different strains, he found a bacillus which he could 'train' to eat sucrose, another form of sugar.

Now the two strains are cultured in his laboratory and kept alive, waiting for the first commercial plant.

Each weekend a tiny speck of bacterial dust is washed from a tiny

glass vial into a pint bottle of nutrient and placed overnight in an incubator.

In the morning the clear liquid has turned cloudy. Made up to 10 litres, it is aerated for 24 hours in a glass flagon, then made up to 30 gallons in a large tub.

An electric motor is switched on and propeller blades churn the fluid for five hours while it grows thicker and whiter, with a creamy froth on top.

Part is kept to start the next 'brew,' and the remainder, drawn off and pasteurized, is wheeled away to eagerly waiting chicks in the animal houses.

There is a splashing in the tub—30 gallons of water, a little sugar, a tiny fraction of ammonia salts—then the purr and swish of the propeller as the Roberts mechanical cow starts production again.

—British United Press

Making Ammunition Automatically

MAKING ammunition is becoming almost as mechanized an operation as bottling Coca-Cola. And the Rockford (Illinois) Ordnance Plant is fast becoming the pacesetter for the industry. Its 155-mm. shell production line might be called an automatic factory without computers.

Steel bars about 24 feet long and six inches square are placed by a hand-operated overhead crane on a series of metal saws to be cut into billets less than one foot long and weighing about 120 pounds. From then until the finished shell case is packaged for shipment, it is not touched by human hands, except for inspection.

The plant was designed and built by W. F. John Barnes Co. under supervision of Defense Plant Corp. in 1941. During World War II it turned out 37-mm. and 57-mm. shells. The 155-mm. automatic production line was installed but never operated before the plant went into moth balls in 1946.

Right after the Korean outbreak, Chicago Ordnance District reopened the plant, had the 155-mm. line completed. It was rolling in late 1951.

In March, 1953, Pressed Steel Car Co., Inc., of Chicago, landed the contract to manage and operate the plant largely on the strength of general production know-how. It had made wartime tanks and other armored vehicles.

The plant's efficiency is due to the variety of conveyors and loading and unloading devices along the line.

Shells travel in fork lifts, aerial and roller conveyors, are picked up and set down by mechanical jaws.

When Pressed Steel Car Co. took over the Rockford plant operation, its only changes were in top management. It kept the plant's 600 employees and basic equipment. It retained the feature that makes Rockford a possible pattern for small plants that see the trend toward automation but feel control equipment might be too costly.

That feature of the Rockford line is emphasis on the operation itself rather than on elaborate controls. Many control functions could be performed by electronic sensory apparatus—but the builders and managers preferred to keep people. The human operators use judgment in loading the ovens and machines to keep too many pieces from piling up.

John Diebold cited the plant in his Automation—The Advent of the Automatic Factory as an example of how automation can be made efficient without waiting for computers to become cheap and readily available. **—Business Week**

Push Button Concrete

COPPER CLIFF, Ontario.—A 'push button' system of blowing concrete by compressed air through pipe from underground mixing stations into construction forms has been installed by the International Nickel Company of Canada Limited at its Creighton mine.

This system of utilizing 'airborne' concrete is greatly expediting the company's program of mining by induced caving.

To stabilized areas of the mine worked and abandoned 40 or more years ago, and utilize old openings in which the timber supports have rotted and collapsed, extensive concreting is necessary.

Very slowly and often only with the greatest difficulty could concrete be delivered to these locations until the 'push button' system of blowing it there by compressed air was installed.

Several thousand bags of cement a month are now being used underground at Creighton to build slusher stations and drifts, box-hole brows, switchrooms and other installations required to meet the caving project's quota of 12,000 tons of ore per day.

Concrete mixing stations are located on the 6th and 20th levels. Gravel for the concrete is received at the mixing stations by gravity from surface through a raise formerly used for bringing rock fill to the various levels of the mine. Control chutes have been installed in the raise for handling the gravel at each station. Cement is brought from surface to the mine's regular transportation system.

—Canadian Press

Electrical Industry Expands

SCHENECTADY, N.Y.—General Electric Company in the next few years plans to increase its scientific staff working on fundamental research by 50%, from a present force of 1,000 to 1,500, President Ralph J. Cordiner disclosed at a G-E diamond anniversary observance here recently.

Included in the expansion will be the addition of 180 scientists to a present 270. Physical facilities for research and advanced engineering development work already have undergone expansion since the war amounting to approximately $120 million, he said.

Mr. Cordiner spoke before 75 outstanding scientists, engineers and businessmen who received part of their education through Coffin

and Swope fellowships in honor of G-E's first and third presidents, Charles A. Coffin and Gerard Swope.

He said that industry already has a store of technology which offers tremendous opportunity for growth in the immediate future.

He stressed, however, that the nation cannot afford to neglect basic research which discovers the new facts on which future technology will be based.

The problem, he said, becomes one of looking ahead far enough to make sure that plans for the future place proper emphasis on both fundamental research and applied research and advanced development.

Solution of only a few problems, in the belief of Mr. Cordiner, would make major contributions to the world's way of living. The problems, for which scientists are seeking solutions, include:

1. Development of new high-temperature alloys which would permit higher operating temperatures for heat engines such as turbines and a resulting increased efficiency.

2. Development of permanent magnets ten times stronger than present which would permit reduction in size of motors and open up the possibility of adapting permanent magnets to assembly line operations.

3. Improved heat storage systems which would solve the off-peak electrical load problems and also would increase opportunities for storing solar energy. This would permit using electricity at night when demand is low to produce heat which could be stored for daytime use and also would permit storing solar heat in the daytime for use at night by means of heating water or chemicals.

4. Development of infrared-sensitive phosphorescent materials capable of converting infrared into visible radiation which would make possible much more efficient light sources.

5. Development of a system for the direct conversion of the energy of gaseous combustion into electrical energy by means of a 'fuel cell' which would greatly increase the efficiency of conversion.

6. Development of super-conducting materials, now known at only low temperatures, for use at average normal temperatures to give high

performance at practically zero loss of electrical energy. There is a large amount of electrical energy loss because of resistance in wire and other conductors. At near-absolute zero temperatures the conductivity is many times greater because resistance is almost negligible.

7. Development of a magnetic oxide method which would permit molding or casting of the cores of motors and transformers, thereby eliminating the present laborious method of stacking sheets of material to form the cores.

General Electric, Cordiner said, because of its belief in the job ahead, has engaged in a post-World War II program for expansion and modernization that will reach $1,100,000,000 by 1955. In this expansion the company already has spent $120 million for improved facilities for research and advanced engineering development work.

★ OMAHA, Nebraska.—Researchers have transmitted brain waves over hundreds of miles of ordinary telephone lines in what is described as the first such successful test anywhere.

This means it is possible for a medical expert to make an immediate analysis of brain waves of a patient located miles away. A patient in a remote area could get the services of top medical men without leaving his home area.

Brain waves are tiny electrical impulses generated by the brain and transmitted through the skull. Behavior of the brain waves provides clues to the presence of cerebral hemorrhages or brain tumors.

The successful test climaxed research at the University of Nebraska college of medicine here. —*Associated Press*

★ NEW YORK.—A wrist radio for every one has changed from a possibility into a probability.

Research scientists have developed a 'capacitor' one-eighth of an inch wide and five-sixteenths of an inch long.

It will substitute for a condenser in a radio circuit and serve as the indispensable companion of the widely publicized button-size transistor which can substitute for the vacuum tube.

The new device came out of the research laboratory of the General Electric Co., which revealed its existence by announcing that it was 'a new product' and hence available to anyone. —*British United Press*

★ MADISON, Wisconsin.—A crime-buster here is making history with a 'soft ray' X-ray camera that detects evidence without destroying it.

Charles M. Wilson, director of the state criminal laboratory, was first to use the new type of X-ray to produce evidence in a criminal case.

Research scientists in the early 1940's made the X-ray discovery that made Wilson's later feats possible. The key to their success was a thin sheet of metal called beryllium, which they used as a window for the X-ray tube. —*United Press*

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

A TOBACCO HARVESTER, SAID TO be the first produced commercially in the United States, was demonstrated recently by Long Manufacturing Co., Tarboro, North Carolina. With a seven-man crew aboard, the machine can harvest 800 to 1,000 sticks of tobacco per day.

AUTOMATIC INSECT CONTROL may be a coming feature of milling, baking, brewing and bottling plants along with others that have pest problems. West Disinfecting Co. of Long Island City, N.Y., has developed fogging equipment that can be installed in existing buildings.

Compact atomized units are attached by pipeline to an insecticide reservoir on the roof and to the plant's compressor system. Sections or the whole plant can be treated by turning a few knobs.

CHEMISTS OF THE INSTITUTE OF Gas Technology have developed a new process for making a natural gas substitute from natural gasoline and other oil products. The basic materials can easily be transported and stored; they are then converted to natural gas at times of peak demand. The new process is much more economical than older methods for producing gas substitutes from oil, since it also yields some valuable chemicals as byproducts.

ADVANCES IN THE ENGINEERING of transistors for the electronics industry are coming rapidly. Latest unit is the one developed by the General Electric Co. Called 2N43, this new transistor has a power handling ability three times that of other current models, an all-welded shell that protects the inner workings of the elements, and an ability to operate

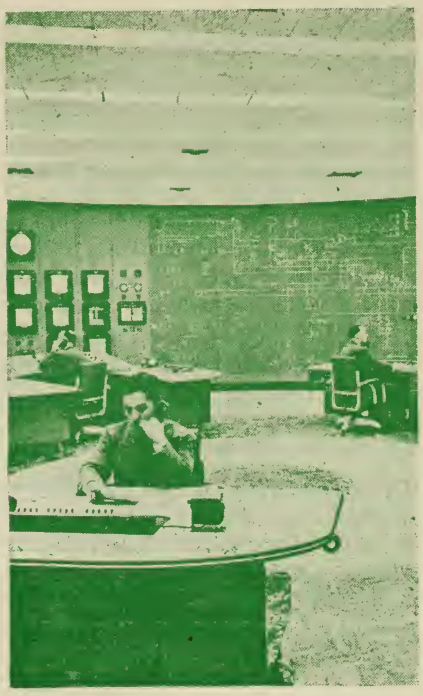
through a wide range of temperatures and resistance to moisture.

AN ULTRA-SENSITIVE ELECTRIC relay that operates on very low power is now making a bid for a place in the electrical equipment market. Called Capaswitch, the new unit in many cases needs only a hundredth the power required for the conventional electromagnetic-coil relays—widely used in industry as electric-powered switches.

According to maker Mullenbach Electrical Manufacturing Co. of Los Angeles, even the small current from a photo tube can operate the relay directly, without using intermediate amplifier tubes. On an automobile this could mean, for example, that a photo tube could provide the power to trip the beam of your headlights when you approach another automobile on the road.

Key to the unit is an electrostatic element that can store minute amounts of energy from a low-energy source until enough has been accumulated to operate the relay. Since there is no coil to burn out, Capaswitch can withstand wide voltage variations. Commercial production will start late this year.

A GAS TURBINE ENGINE, THE type now used on railroad locomotives, will be used for the first time in the petro-chemical industry at a refinery of Esso Standard Oil Co. Hooked up to three big compressors, it will help handle hydro-carbon gas in a processing operation. The engine's exhaust is engineered so that it can make low-cost steam for the refinery.



THREE MEN CAN CONTROL SEVeral plants from the Hicksville, Long Island, headquarters of the Long Island Lighting Co. Output of gas and electricity in the company's scattered plants can be regulated (by one person if necessary) from the bomb-resistant underground room.

METHODS OF MELTING THICK crude oil from the earth by fire and storing it under the sea have been found by petroleum scientists. The research team of Carl S. Kuhn and Robert L. Koch reports successful field experiments to recover butter-like crude by setting off

underground fires to thin the oil so it can be pumped to the surface. The storage plans involves pumping crude into undersea salt domes, eliminating expensive pipelines and storage tanks.

Kuhn and Koch headed a six-year study of recovering crude by fire for Socony-Vacuum Oil Co. and its affiliates. They call their extraction process 'in situ' combustion, explaining it is a Latin term meaning 'in place.' In situ combustion was developed to thin or melt heavy crude with heat and force it up and out a nearby producing well. Air is pumped down an injection well to keep a portion of the oil burning and create an oil flow.

AN AUTOMATIC DISHWASHER FOR laboratory use is being introduced by Chemical Rubber Co., of Cleveland. The Labwasher, being manufactured for CRC by Westinghouse Electric Corp., is specially adapted for washing test tubes, flasks, beakers, and other laboratory equipment.

A 14,000-TON EXTRUSION PRESS, claimed to be the largest ever erected in the United States, is now installed at Alcoa's Lafayette, Indiana plant. Also being installed is a huge 'stretcher,' four times as powerful as any in operation, which is used to relieve the strains in the extruded aluminum parts.

LATEST THING IN LAWN SPRINKlers is an automatic job that propels itself around your garden, winds up the hose and shuts itself.

The sprinkler is mounted in a two-wheeled device much like an ordinary hose reel. Lay up to 125 feet of hose around trees or corners in any pattern you like. Adjust the sprinkler, turn on the tap, and forget it. Water pressure (30 pounds) will wind the hose onto the reel, pulling the sprinkler in toward the tap, at the rate of about 17 feet an hour. When the reel reaches a special valve, the sprinkler shuts itself off. At one setting it can water an area 30 feet to 70 feet wide and up to 125 feet long.

The new sprinkler is manufactured by Reel Sprinkler Co., of Toledo.

A FIRE ALARM SYSTEM DESIGNED by Minerva Detector Co. Ltd., Richmond, England, is said to have a service life of 1000 years. At the heart of the device are small cells containing a radioactive material, which sensitizes them. Traces of smoke from a fire trigger the sensitive cells; an alarm sounds on the control panel. Each cell can protect from 20 to 50 yards of floor space.

(*Continued from page* 20)

Sooner or later such speeds will be commonplace, so where then will the adventure-seekers pursue their quests? The suggestion of an answer is already at hand.

The number of people who can actually participate in adventurous undertakings for their own satisfaction is a small fraction of the total population. A tiny minority are doers while the vast majority are envious spectators who, perforce, must derive their thrills vicariously from the exciting exploits of others. While this frustrated yearning is satisfied to some extent by patronage of certain arena-type events, it is a bottomless pit savoring greedily anything even remotely tasting of adventure. Press, radio and television are most articulate in catering to this voracious appetite, devoting space and time to championing the cause of make-believe interplanetary travel.

Though man has not yet flown non-stop around the world he is seriously contemplating a flight to the moon which is a quarter million miles distant — or ten times this planet's equatorial circumference. Such picayunish considerations, however, fail to perturb the masterminds of science fiction and colored comics. To them the moon is in our back yard compared with the distances traversed daily by comic-strip heroes Buck Rogers and Flash Gordon in their dashes from planet to plant and from galaxy to galaxy. Unbridled imagination is the craft carrying author and readers from prosaic daily lives into realms of adventurous enchantment.

Is Citizen John Doe distressed by the horrid realities of taxes, grocery bills, etc.? Why should he be when all he has to do to escape them—temporarily at least—is to pick up the latest copy of his favorite space thriller and read the next exciting episode of how his hero Jimmy Addlepate escaped the scheming clutches of Princess Seducia, ruler of the planet Pingpong?

Yet far from satiating his demands for thrills or approaching his imaginative limits, these boundless supplies of reading matter which cause the newsstands and magazine racks to sag seem only to serve as stimuli for his further dream-world perambulations. He looks at our heavily over-populated world and sees an answer to the perplexing problem in ship-

ping the excess people to some distant planet. Let the scientists solve the problem of building the necessary craft and equipping them with provisions.

Now let's come down to earth for a while.

Whether or not future accumulations of scientific knowledge will render space travel feasible or possible remains for the future to determine. It is not really very important to the people living on this planet now, for at present there is no solution to our physical problems anywhere but here on this planet.

Furthermore, Technocracy Inc. reminds the people of North America that **their** specific and unique problem is restricted to the physical limits of this Continent, and that its solution rests here—not scattered around the globe. Ours is a new type of problem that has never existed in the world before, the solution of which is a **real** challenge to the adventurously inclined. We have consistently ignored this challenge which has faced us for three decades, but we cannot much longer continue to ignore it. The circumstances constituting it have steadily increased and intensified until they have grown to critical proportions demanding immediate attention. We refer, of course, to this Continent's accelerating productive capacity which has created a Price System destroying abundance and made mandatory the installation of a method of distribution that is geared to it.

The early settlers of America were pioneers in that they abandoned their old world homes to seek their fortunes in a new and unknown land. Some of them deliberately sought adventure, but all of them found a measure of it in facing the wilderness and establishing homes. There was much work to be done and they went at it with a zest characteristic of the courage that inspired them to come here in the first place.

In the settling of a Continent, our fathers passed on to us a pioneering urge that today expresses itself in a uniquely American way. We of North America are the greatest seekers of new ways of doing things of anybody in the world. We have more gadgets and contraptions designed to make life easier than anyone else. We devised a high-speed technology which in a few years achieved something the rest of the world

has always sought but still has not attained — the production of goods and services in abundant supply for all citizens. . . . And then we stopped our progression without seeing to it that the abundance reached the citizenry!

The time is at hand for us to prod our dormant pioneering instincts into action and leap the last obstacle separating us from the highest standard of living ever known to mankind. In actuality, the obstacle being mental rather than physical is the smallest yet encountered. All we have to do is to rid ourselves of the fallacious concept that we must have money to effect the distribution of the abundant goods we can produce.

Technocracy calls on all North Americans to abandon their absolete Price System economy and to become **social** pioneers in ushering in a functional control which is specifically designed to the requirements of a high energy society. The blueprint of operation of this functional control has already been drawn up and is offered to the people of this Continent by Technocracy Inc. as a public service whenever they choose to institute it. Today it is a choice—tomorrow, a 'must'.

Because of the tremendous productive capacity and the unparalleled resource potential of this Continental area, the distributive mechanism of the Technate of North America will be eventually able to increase the general standard of living about eighteen times the present average. In achieving this objective, the spirit of adventure will have virtually limitless channels of expression.

The ushering in of the Technate will precipitate several tremendous projects to be completed before it achieves its highest development. These will include the rehousing of the whole Continent's population in adequate dwellings, the building of a Continental Hydrology to link up all the major river system for transportation, power and irrigation, the establishment of a Continental power grid for the transmission of electrical energy, and the building of a Continental highway system adequate for all civil and defence needs. Naturally, the aim in performing these tasks will be to complete them in the fastest possible time and with the minimum employment of manpower. Thus, any techniques which might

be developed toward either aspect will be welcomed and encouraged so long as they also fulfill the necessary standards as adequate as the preceding techniques.

The particular job of seeking new products, better materials and more efficient processes will be assigned to a special Research Sequence which will have branches in all other functional sequences. Personnel of this Research Sequence will be drawn from the other sequences and will constitute the best scientific and engineering brains that each has to offer. Accordingly, since appointments to Research will be made on the basis of outstanding abilities displayed in other sequences, it will be an achievement of considerable distinction carrying with it much social prestige for a person to receive such an appointment. From there on, his opportunities for investigating the unknown and for appeasing his spirit of adventure will be expanded immeasurably, for the field of scientific research still remains, for all of its many accomplishments, barely scratched.

Technocrats are proud in their knowledge that they are this Continent's foremost pioneers of imminent social change, but they realize that they alone cannot do the job that has to be done. Therefore they ask their fellow North Americans to join them in the greatest adventure ever to face any people at any time—the attainment of 'the only program which is in complete intellectual and technical accord with the age in which we live'.

—Rupert N. Urquhart

★ MANCHESTER, England.—The *Manchester Guardian* said recently that the great German industrial combine of Krupps is making all-out efforts to capture markets in Asia for construction machinery.

The *Guardian's* correspondent in Bonn reported that the Krupps combine, formerly Hitler's arsenal and now forbidden by the western powers to produce crude steel and to own coal mines, is emerging as Britain's most dangerous competitor as an exporter of construction machinery to the under-developed areas of the world.

—Reuters

★ WASHINGTON, D.C.—Director Allen V. Astin of the National Bureau of Standards told senators here recently that purchasers of battery powder AD-X2 are 'being fooled.'

He also said the principal ingredients in $36 worth of the powder cost four cents at wholesale. *—British United Press*

White Man's Headache

Columnist Barry Mather looks at the paradox of poverty in the midst of plenty. Two North American Indians discuss the White Man's headache, and kill themselves laughing at the White Man with so much food he can't eat trying to teach Asiatics how to live.

OTTAWA.—Mounting surpluses of wheat, meat and butter, bought up to help maintain prices, are taxing the government's storage facilities. Last year's unsold wheat crop is in elevator, but this year's will have to be kept on the farm. (News Item.)

(Imaginary conversation between two imaginary Indians.)

1st Indian—'Oh, oh, White Man . . . Him got big problem now . . . heap big . . .'

2nd Indian—'How?'

1st Indian—'White Man buy'um much butter. . . . White Man got so much butter him have to use margarine.'

2nd Indian—'Huh.'

1st Indian—'White man buy'um hiyu meat. . . . Oh, much beef! Big pork. White Man buy'um! Store'um up, 'cause no can afford eat'um. . .'

2nd Indian—'So?'

1st Indian—'Eee, poor White Man! Him buy last year wheat crop. . . . No can afford use'um. Him stuck with '52 crop. . . . Him want now buy '53 crop. Where him put'um? Two wheat crop in every garage.'

2nd Indian—'Ho.'

1st Indian—'White Man go meat store, ask'um meat price. Meat Man him say . . . "Price so and so today. You like?" White Man say —"Eeee!! Meat price too high. Catchum bones?" '

2nd Indian—'Hmmmm.'

1st Indian—'White Man go food store. Ask'um: "What price bread, butter now?" Store Man say: "Price pretty high today . . . all same half shot!' White Man say: "Eeee! No can eat much bread, butter now." '

2nd Indian—'Why White Man no eat food he store in elevator?'

1st Indian—'You crazy? If White Man eat food he store up then him no try buy food from store! . . . Then store price come down . . . whoosh!'

Reprinted from VANCOUVER SUN.

2nd Indian—'Is bad?'

1st Indian—'Store price c o m e down, all price come down. White Man's pay go down. E e e e! All same go underground!'

2nd Indian—'White Man got so much food he no can eat?'

1st Indian—'Right. . . . White Man also got hiyu big problem. Oh, big headache in Asia.'

2nd Indian—'How?'

1st Indian—'Poor Asia peoples, they no know how to live smart way like White Man. . . . White Man him try teach Asia men real right way to live, with modern White Man system. . . .'

2nd Indian—'Ho, ho, ho, stop, you killing me.' **—Barry Mather**

★ THE HAPPY AUTO DRIVER of the future may be able to relax and enjoy the scenery without even glancing at the road.

The backseat driver, and jokes about same, may become as obsolete as the dinosaur.

You may be able to zoom along a superhighway on a foggy day watching a television show and with nothing to worry about but the cool drink in your hand.

You'd have no worries about staying on the road, passing other cars, or smash-ups with other carefree drivers.

All this may become reality through the magic of electronics.

A model five-foot car electronically equipped now is being put through its automatic driving paces by Dr. V. K. Zworykin, television and electronic scientist of the Radio Corporation of America.

Zworykin and his assistants at RCA's David Sarnoff research centre in Princeton, N.J., have a laboratory car which can:

Steer itself along a prescribed route.

Stop itself when it approaches a metal obstacle.

Turn out of its own lane to pass a slower car.

The cars of the future could be equipped with two coils, one on each side, to pick up the electrical waves from the cables.

If the coil on one side gets more of the signal than the coil on the other, electronic equipment controlling the steering gear would bring the car back on course.

For passing other cars, the two parallel road cables would connect at frequent intervals with diagonal wires.

The presence of a stalled car, or a slowly moving car ahead of yours, would be signalled by a 'radio tail' sending up warning signals.

When your car picks up the warning, it is shunted over one of the diagonals to the passing lane.

The scientists are working out in miniature a system which could be applied to superhighways of the future so that passenger cars could operate the same way.

The system calls for a two-lane highway with an electric cable buried in the concrete in the middle of each lane.

Each cable would set up a magnetic field of a certain frequency.

—Associated Press

Neither Poverty Nor Riches

Under the Price System most of us are poor, some of us are rich, and practically all of us are dissatisfied. But in the Technate no one shall have 'either poverty or riches.' Instead, every citizen will have a high standard of living and economic security from birth to death.

HUNDREDS of years ago some unknown person of more than usual intelligence said, 'Give me neither poverty nor riches.' If you were never handicapped with too little money, or burdened with too much of it, you would find yourself in a situation that would aid your personal happiness. If you cannot believe this, Technocrats are anticipating that it will soon be proved to you by the Technate of North America.

No one needs to have it explained to him why too little money is a handicap under the Price System. But most of us have never had great quantities of surplus money though we often wish we had. Such a wish, however, is unwise.

If you were the possessor of a huge supply of debt tokens (money), you would probably be unhappy. Many such people are extremely so. So why desire wealth, or poverty either? Instead, why not desire the Technate, in which you and all citizens of this Continent will have lifelong security, a high standard of living, but 'neither poverty nor riches'?

The Technate is an order of society scientifically designed for the North American Continent. It is the inevitable by-product of North American technology, a technology which provides an unsalable abundance of goods and services, and at the same time replaces much human labor.

A modern North American depression is caused by glutted margets and technological disemployment, both of which are bound to to reduce purchasing power. In order to prevent so serious a calamity the Price System can only experiment with such anti-social schemes as throttled production and invention, destruction of surpluses, waste, war and armament races.

Fortunately, Technocracy Inc. has designed the Technate of North America as an alternative

to the blundering trials and errors of Price System witch doctors. In the Technate your rights as a citizen will be based on the Energy Certificate, making superfluous any Bill of Rights, Declaration of Independence, or British North America Act.

The Energy Certificate will be your means of identification. It will be your purchasing power although it is not money. It will be your ballot, but not your political state, just as Technocracy is not a political party. Moreover, the Energy Certificate will not be a medium of exchange but a medium of distribution.

Let us now make the various properties of the Energy Certificate more clear. In the Technate, your book of Energy Certificates will identify you wherever you go. They will possess some means of ready identification, such as counter-signature, photograph or some similar device, and cannot be used by anyone but yourself. In the hands of all North American citizens, the Energy Certificate, being non-negotiable, will prohibit hoarding, booms, depressions, gambling, and most forms of graft and corruption.

Then, too, your Energy Certificates—of which you will always have a plentiful supply in the Technate—will be your purchasing power, although they are not money. This sounds like a contradiction and requires an explanation.

An abundance of goods and services can never be sold. How can anyone sell to a glutted market? For the very same reason that no one can squeeze three pints of material into a quart-sized container if both material and container are rigid, incompressible and inelastic. An abundance can be produced only by labor-displacing machines which reduce public buying power by reducing public earning power. And when sellers try to market an abundance they find themselves compelled to sell at low prices in order to dispose of any appreciable portion of it. The necessity of doing this also strongly and irresistibly tends to lower the public's earning and buying power. So it should be easier than it is for the public to understand why an abundance cannot be sold. It is simply because most people, under conditions of plenty, could not possibly have the money to pay for it.

THE ENERGY CERTIFICATE ·USED·

THE TECHNATE OF AMERICA

(A) DISTRIBUTION CERTIFICATE 180 (E)

1940-41 (D)

(C) J.P.Hayes

9038·1·16794	(F)	12349	(G)	8·33···16·3	(H)	22···11	(I)
13090-23	(J)	205···21·05	(K)	H·76302	(L)	Z·97321	(M)
34-46···11·E·7·8	(N)		(O)		(O)		(O)

(A) AGE GROUP COLOR
(B) SEX
(C) SIGNATURE
(D) PERIOD OF VALIDITY
(E) DATE OF ISSUE
(F) REGIONAL DIVISION AND REGISTRATION Nº
(G) REGIONAL DIVº OF ISSUE
(H) FUNCTIONAL SEQUENCE AND POSITION OF HOLDER
(I) Nº EMPLOYED AND UNIT OF SEQUENCE
(J) TOTAL CREDITS AND AMOUNT OF PURCHASE
(K) DAY AND TIME
(L) SERIAL Nº OF RECORDING MACHINE
(M) CERTIFICATE SERIAL Nº
(N) NATURE OF PURCHASE
(O) IDENTICAL PURCHASE

IT IS
A MEDIUM OF DISTRIBUTION
A COMPLETE BOOKKEEPING SYSTEM
A 24 HOUR INVENTORY
IDENTIFICATION AND RECORD OF HOLDER
A GUARANTEE OF SECURITY

IT IS NOT
A MEDIUM OF EXCHANGE
SUBJECT TO FLUCTUATION OF VALUE
SUBJECT TO THEFT OR LOSS
SUBJECT TO HOARDING OR GAMBLE
A MEANS TO WEALTH OR PRESTIGE

'THIS CHART IS BASED ON THE PAMPHLET "THE ENERGY CERTIFICATE" PUBLISHED BY TECHNOCRACY INC., 198 E 44TH STREET NEW YORK N Y

PREPARED BY THE RESEARCH COMMITTEE A D 1939

No 6

In the only social design ever blueprinted for the distribution of abundance, namely the Technate, goods and services will be given —not sold—to all citizens of North America, who nevertheless will obtain most commodities with their Energy Certificates. However, no one can say that anything is sold to the people, because purchasing power will not consist of money which they earn by the sweat of brow or the cunning of brain, but of energy transformed into goods and services by millions of kilowatt-hours ticked off by the Continental technological equipment, and which will be freely provided to all citizens in the form of Energy Certificates.

When a citizen surrenders such a certificate in order to obtain a commodity, the surrendered certificate will be cancelled and will become an order for the shipment of a similar commodity to the place where the purchase was made. It will be readily understood that when all the citizens all over North America are always able to use their Energy Certificates for the obtaining of legitimate goods and services, that the people will be the real rulers of the Technate, while the Technocratic State will be their obedient servant at all times. Such a design will be a physical democracy, the only genuine democracy possible.

To put it another way, the Energy Certificate will be an accounting device, a voting device, and a means for the maintenance of individual and public freedom, but in no sense will it be money, for money has none of these properties.

Some people apparently fear Technocracy on the grounds that a Technocratic government will not consist of elected representatives. They never stop to think that in countries like Canada and the United States that, although we elect our politicians, we do not elect their behavior and consequently they do not represent us at all. In a Technate, however, we would elect the services of those who were best qualified to render them. Efficiency alone would win promotions and responsible positions in a Technate. We would always have at our service the best scientific government personnel available, whose chief function would be to produce and distribute such commodities as the people would demand

through the medium of the Energy Certificate. So you see, the Energy Certificate would be a device you could vote with at any time without any fear of losing your vote. Can you correctly say as much for the political ballot, which you can use only once in a while, uncertain as to whether your candidate will be elected or not, or whether he will keep his promises if he is?

Did you ever ask yourself why you vote in a political election? Is it not because you think — usually in vain—that by so doing you are going to be rewarded with the services you need or desire? Then why not sponsor Technocracy which has the technological design for providing your legitimate wants every time you vote for them. No order of society in which the citizen is denied full consumer's rights is a free form of society, and no false labels such as 'democracy,' 'the American way of life,' or 'free enterprise' can make it so. In the United States and Canada today no voter is a ruler, but all citizens in the Technate will be both rulers and voters because they will always get what they vote for.

When you become a citizen of the Technate you will find yourself in the enviable position of having neither poverty nor riches, but none of your fellow citizens will be able to envy you since they will have neither of these extreme conditions for themselves. You will have your needs and your wants satisfied. Food will be yours in abundance, health services and local transportation will be absolutely free, not even chargeable against your energy income. You will have the best in housing and all other requirements, including educational and recreational facilities. And this will be Technocratic freedom—full consumer's privileges plus freedom of speech and worship and freedom from toil.

Some people sneer at the idea of a Technate ever coming, but Technocrats who have any understanding of Continental and world conditions realize that its advent is probable as the result of North America's extensive technology and natural resources. People's sneers may be an expression of their fears, for besides fearing the loss of political representation — or misrepresentation—many dread the loss of ownership of such things as cars, homes, farms,

stores and the rarer, larger holdings such as factories, shares of various businesses and industries, etc.

But why fear these so-called losses?

You will not need to own a house if you have the guaranteed use of the most comfortable, labor-saving dwelling place that modern technology can provide, relieving you of the necessity of buying, renting or making costly repairs upon any privately owned home. Non-ownership of a house will not mean homelessnes in the Technate as it does for many poor people under the present Price System. On the other hand, ownership of a house cannot give anyone the privileges under the Price System that will be yours as a householder in the Technate.

You cannot own a car in the Technate, but that does not mean you will never ride in one. You can have better, cheaper rides in a rented public car without being responsible for its brakes, its upkeep or its condition. Even under our present social setup you can take a trip by rail without owning the train, or a voyage without owning an ocean-liner—if you can afford it.

And why should you own a farm in the Technate? After all, you will be able to eat all the bread you want without owning a wheatfield, flourmill or bakery, and you may drink as much milk as you like without owning or milking a cow, just leave it to the milking machinery.

Even under the Price System a millionaire can no more own the sun than he, or you, can live without it. Neither does he own the air, yet he doesn't smother on that account. Ownership of the means of production, distribution and transportation would be just as ridiculous in a Technate where no one could earn a living with them anyway, but millions of machines make a living of a high standard quality for all.

Ownership at its best simply means that you have to part with some of your purchasing power in order to obtain the privilege of ownership.

Ownership at its worst, the ownership of the means of production, distribution and transportation, means that you have to lose a usually large portion of your purchasing power in order to manouevre yourself into a position in which the public becomes

indebted to you. From such a vantage point you can make a poor, fair or good living depending upon how cunningly you can fleece your customers, and how successfully you can ignore 'the golden rule.' Property in the form of factories, railways, farms, etc., is anti-social, because the owners of these things oppress the consumer by keeping him in debt.

In any Price System most people are relatively poor and tend to become poorer as debt tokens centralize into the hands of large property owners. As a result, the majority of people are worried with poverty while the wealthy few are just as worried with their property. But such conditions cannot be blamed on big business, so much as upon the system that creates them.

In conclusion, an appeal is in order, a strong appeal to you to do your part in fighting the current anti-social economic conditions. Do your part simply by joining Technocracy Inc. now, and working for the coming of the Technate of North America.

Under the Price System most of us are poor, some of us are rich, and practically all of us are dissatisfied. But in the Technate no one shall have 'either poverty or riches.' Instead, every citizen will have what every citizen needs: a high standard of living and economic security from birth till death. **—D. R. Ritchie**

★ STRASBOURG, France.—The Council of Europe has warned its 15 countries they are threatened by an economic slump and has ordered its economic experts to lay plans to deal with unemployment.

The council's assembly passed a resolution which warned that a trade recession might hit western Europe in the next few years.

It ordered the 18-nation organization for European economic co-operation to draw up a plan for counteracting unemployment.

The resolution said 'the economic climate of the world is changing' and cited these danger signs :

1. Many food and raw material prices 'have begun to show a recession.'
2. Trade competition between industrial nations 'is converting a sellers' into a buyers' market.' *—Reuters*

★ ST. JOHN'S, Newfoundland.—For the first time in 450 years Newfoundland fishermen have quit fishing.

Prices offered by exporters for salt cod this fall dropped so low that the fishermen could not meet their expenses.

More than 5000 of them stopped fishing after an announcement that the Canadian government would not come to their aid with price support. *—Canadian Press*

The Peace Scare

Columnist Eric Nicol examines prevalent business attitudes toward the Korean truce and to peace in general. 'To suggest that our prosperity depends on war spending is ridiculous,' 'business is sound as a rock,' 'we're confident this peace scare will blow over.'

THE truce in Korea will not affect the booming national economy, according to leaders of industry and government experts.

'To suggest that our prosperity depends on war spending is ridiculous,' says Herman V. Schnorff, president of International Widget and Dingus Corporation.

Hurriedly filling a satchel with bundles of banknotes from his office safe, President Schnorff told newsmen:

'It's true that our widgets have been used in the manufacture of plastic dice, and that the sale of plastic dice has been increased by our boys going to Korea. However, we have every confidence in an improved civilian demand for dice, especially if we can convince the school boards that shooting crap is wholesome exercise for the kiddies. Now if you'll excuse me, I have an appointment with a mattress.'

Equally optimistic was J. Hardtop Oglethorpe Junior III, chairman of the board for Du Ponk, makers of all types of electronic equipment including the thing on the telephone that goes 'hee-haw, hee-haw' when you're trying to get a number.

'American business is sound as a rock,' Oglethorpe said. 'People are buying as they never bought before, that is nothing down and 50 years to pay. With every TV set Du Ponk is giving away six free treatments from a psychotherapist. And we're working on a scheme whereby **we** pay the **customer** to buy the product. All he has to do is give us a mortgage on his children. Don't worry, American know-how will lick this thing.'

Otis Rye Wheatbread, Republican chief of the sub-committee of the House committee on superfluous committees, has reaffirmed the government's confidence in the national economy.

Reprinted from VANCOUVER PROVINCE.

'We're confident this peace scare will blow over,' said Rep. Wheatbread. 'We can't emphasize too much that all we have in Korea is an uneasy truce. A truce is not an armistice, an armistice is not peace, and peace is never permanent. We must continue to build up our armed strength until the Communists show that they really want peace, which of course, they really won't.'

Now under control is the panic amongst sponsors of radio and television giveaway programs, which have depended heavily on Korean veterans for the shows' emotional climax of giving a serviceman a deep freeze or other treasure.

'We still have a good supply of veterans,' said an executive vice-president of NBS. 'And if the worst comes to the worst we can always call up the Boy Scouts.'

In Canada, a spokesman for the Department of National Defence has assured the public that the Korea truce will mean no reduction of defence costs, except that of ammunition.

'We shall keep our dumps,' he said, 'This will not affect the national housing plan.'

On the Toronto Stock Exchange many issues have gone into a decline. U.S. Gelatine is shaky, Zenith Elevators are going down, Consolidated Bloomers have lost ground, and Marpole Bridge opened slowly and closed very weak.

'Only seasonal,' explains an official of the exchange. 'Buyers are away on vacation, or wishing they were. I'm going to Alaska myself. I hear they need men up there.'

All in all, the truce in Korea hasn't changed anything and therefore, is no occasion for rejoicing. Rejoicing is confined to the troops who are no longer being shot at. Not too noisy, please, fellows. **—Eric Nicol**

★ MIAMI, Florida.—Development of a new and promising 'supersonic' vaccine against whooping cough was reported here recently.

It was described by a Texas scientist as being at least as effective—in initial tests—as present vaccines in preventing and also as having certain potential advantages.

The vaccine is 'supersonic' in that it is prepared by disintegrating whooping cough germs with sound waves of such high frequency they cannot be detected by the human ear. The disintegrated bacteria then are treated with alcohol to remove any poisons, and the material, after further purification, is incorporated into a vaccine. *—Associated Press*

They Say . . .

Automation

It is possible to foresee the day when industry will be able to produce vast amounts of goods with much less labor than it uses today. The strides in productivity that have been made in the past 50 years may be small compared to what is ahead.

And not far ahead, either. The reason: automation. A strange word conveying only a theory of super-mechanization a few years ago, it is now accepted as an industrial fact that will eventually spread to almost every industry.

Automation is far more than an extension of present-day mechanical gadgetry. Mechanization means the replacement of human power with mechanical power, humanly controlled. Automation, going a step further, eliminates the human control.

Thus an operation like the machining of a part automatically controls itself. Just as the eye of the commuter adjusts to the bouncing newspaper page on the 8:16 each morning, so the machine adjusts to variations in the metal to make the part conform to predetermined standards. No human eye is needed, no calipering.

This automation — or feedback control—makes possible a continuity and interlocking of operations never before achieved.

To a large extent automation already exists in processing industries like petroleum refining. Oil companies have a labor content per sales dollar as low as 10%. At a trio of new chemical plants in Calvert City, Kentucky, with a capital investment of several million dollars, only a few hundred men run the entire integrated operation.

—Business Week

Robot Age

Pushbutton homes, pushbutton cars, automatic factories, controlled beam highways, supersonic transportation. . .

We're going to hear a lot more about them in the next 50 years says Canadian Westinghouse president H. H. Rogge.

Is this fancy talk? Viewed against the progress of the past 50 years we don't think so.

Rogge told a director's luncheon at the Canadian National Ex-

hibition that 95% of all work done today in manufacturing is performed by electrical or mechanical energy. This use of energy is the 'miraculous factor' which has boosted Canadian production and sent the standard of living soaring, Mr. Rogge said.

'This increase in productivity is not because the typical worker of today is stronger, more skilful or more diligent than his grandfather. It is because he uses better methods, better tools and machines—and vastly more mechanical power.'

The age of power means that every Canadian has working for him an army of 136 slaves, serfs or robots, each equal in strength and energy to a robust man.

—Financial Post

Machinery Is Everywhere

This has been called the atomic age, the technological revolution, and the electronic age. But call it what you may, this era is maintained by machines of all kinds, types, and sizes.

Machinery is everywhere. Practically all necessities of life are made by machines. The atom bomb and all electronic equipment used in war as well as in peace are made either in part or entirely by machine tools.

In thousands of factories, foodstuffs are refined and prepared, fabrics are woven, and wood and metal are fitted to make the furnishings of civilization. Everywhere factories are building labor-saving devices for the education, recreation, and prosperity of the people.

Lincoln had no telephone in the White House, and no electric light. Think of the development of the telephone and the machines that have made it possible. Think of the development of the electric light and of the huge engines and generators in the electric power stations. Think of the growth of the automobile industry, of the improvements in the product year by year, and the improvements in the methods of manufacture.

Consider the motor alone—the absolute reliability of the materials used, the necessary perfection of fit of its component parts, the marvelous methods of manufacture to make these parts by the thousands. These examples could be multiplied indefinitely—sewing machines, cameras, radios, motion-picture machines, typewriters, cash registers are a few

that are universally known. Everybody knows too that all these things are made by machinery.

—Machinists Monthly Journal

Technology and You

Recently, a group of research experts said our American standard of living doubled during the last 40 years. In a material sense, that is true. Electricity replaced the oil lamp and gaslight. Automobiles became commonplace. Telephones reach everywhere. Radio and television bring information and entertainment to our homes at the touch of a button. Machines wash our clothes and our dishes. Schools are larger, more numerous, better equipped. So are hospitals. Marvels of man's skill are on every hand.

However, those 40 eventful years were marked by periods of hardship and privation for millions of workers. During the '30's great industrial plants stood idle and rusting. Technology alone cannot solve the problems of human welfare. That error must not be repeated.

One of America's largest manufacturing companies is circulating a booklet in which it is forecast that our living standard will double again during the next 30 years. This, I think, is just as possible as was the great advancement of the previous 40 years. After reading reports about many scientific wonders already close at hand, including the marvels of an atomic age, I am prepared to believe that we may double our present productivity within 20 years.

The larger and more difficult problem is: Will we be prepared for this abundance when it arrives? Will our economic and social machinery keep pace with technological skill? The solution rests with all of us—with industrial management, with workers, with farmers, with consumers, and with government. And that solution will elude us unless we keep pace with progress, step by step.

—D. B. Robertson, BLF&E Pres.

★ LOS ANGELES.—California's oil supply is reaching a critical surplus that poses an economic threat unless action is taken to reduce it, Stark Fox, executive vice-president of Oil Producers Agency, warned here recently. *—United Press*

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the membe. to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska, Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Whatever the future of Technocracy, one must fairly say that it is the only program of social and economic reconstruction which is in complete intellectual and technical accord with the age in which we live.

—Encyclopedia Americana

TECHNOCRACY DIGEST

FEB. '57

A Year of Frustration

'The Old Spectre Revived'

Robot Machines and Men

Farewell to Europe

Responsible Citizenship

Automatic Factories

A New Metal, Zirconium

A Mature Civilization

No. 151

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TECHNOCRACY DIGEST

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The Quarterly Survey

Scientists vs. Politicians

Harvard geologist Kirtley F. Mather stated recently that a 'cleavage' between scientists and politicians is endangering U.S. national security.

Mather said that the scientist's inventive genius is widely applauded but there is 'great popular skepticism concerning the ability of the scientist in the areas of economics, politics and social organization.'

In a paper submitted to the 120th meeting of the American Association for the Advancement of Science, Mather said:

'This low appraisal of the scientist-as-citizen is an important aspect of the anti-intellectualism that now appears all too commonly in the climate of public opinion. It has been encouraged and strengthened by destructive politicians and demagogues.'

One of Technocracy's major tasks has been to educate the public concerning the significance of the scientist in our present-day society and the necessity for bringing more science into social and economic affairs. We have also shown that the scientist and the politician are absolutely incompatible today in North America.

Unemployment Up

Canadian unemployment is the highest since World War II and is still climbing. Labor leaders have predicted that the jobless figure will rise to 500,000 by the end of January.

A Federal Department of Labor review showed 338,066 persons looking for work through

Herblock in The Washington Post

"You Wouldn't Criticize Me, Would You, Pal?"

National Employment Service at December 10. This compared with the previous post-war high of 312,000 in the late winter of 1950, before the Korean War stimulated employment.

The NES figures indicated an increase of 100,873 from a year earlier, and of 72,023 in the three weeks preceding December 10.

'This is a situation we should not be satisfied with in a country like Canada where we have an abundance of everything,' stated Percy R. Bengough, president of the Trades and Labor Congress of Canada. 'It means a lot of misery and I don't think we should take such matters casually.'

Unemployment is also mounting in the United States. It will continue to rise in both countries unless this Continent becomes involved in a major war.

Mechanical Man

For doing both heavy and delicate jobs under remote control, General Electric has built a monstrous, sensitive machine it calls 'O-Man' (for 'overhead manipulator'). Obeying electric signals from a distant control console, the device can lift 3,000 pounds off the floor and carry 1,000 pounds with a single arm extended horizontally. It can twist thick steel bars into pretzel shapes or tie them in knots. It can use power tools such as drills, hammers or wrenches and can assemble or disassemble all kinds of machinery.

O'Man is also gentle. It can pick up an egg in strong steel fingers and never crack the shell. It can make a cake and slice and serve it as deftly as any housewife.

However, O-Man will probably make few cakes. It will retire soon behind the concrete shields of nuclear reactors or plutonium processing plants. There it will work in a bath of radiation that would strike a human dead, and its massive steel body will become so radioactive that its human creators can never come near it again.

Britain's Crisis

British businessmen are taking a beating in a fierce scramble for world markets. And the slowdown in the nation's crucial export drive is seriously worrying the government.

New orders are not coming in fast enough to insure that trade ledgers will stay out of the red this year. American, German and

Japanese exporters are outpacing the British. If the trend continues it could unhinge the U.K. economy.

Britain lives off its exports. Foreign sales pay for 60% of what Britons eat. That much food must be imported. Exports pay for the imported materials without which industry would grind to a halt.

British efforts are doing fairly well in North America. But they are getting beaten elsewhere, especially in Latin America and the Middle East.

Depression in '54?

The leading Australian economist, Colin Clark, has predicted that the United States will probably undergo a depression this year. Writing in the **Manchester Guardian,** he warned of a 'rapidly mounting emergency,' that, by mid-1954, may result in a slump with six to seven million unemployed.

A majority of America's top economists and statisticians attending the recent annual forecasting session of the American Statistical Association gave as their considered view that the U.S. faces the prospect of a 'recession' in 1954 with total output down $10 billion to $18 billion from the levels of 1953.

—The Editor

★ WASHINGTON.—Unemployment is still on the rise.

New layoff announcements in the automobile and other metals industries continued the trend shown by the latest official figures, which lag nearly a month behind actual developments.

The official figures, in the opinion of the Congress of Industrial Organizations, 'don't begin to tell the story.'

The comment from the CIO was on Commerce Department figures on employment and unemployment. These showed a rise of 425,000 in unemployment between November and December. *—New York Times*

★ PROVIDENCE, R.I.—A breathing machine with a built-in electronic brain is the invention of two Rhode Island doctor-brothers.

The device is believed to more nearly duplicate natural breathing than any other artificial respirator.

Drs. Meyer and Elihu Saklad of Rhode Island hospital said their machine has been used successfully on more than a score of patients during the past year and a half. *—British United Press*

★ PRINCE GEORGE, B.C.—A mechanical packhorse designed to carry more than 400 pounds is undergoing tests here.

The machine, using a light motor and a deeply-treaded pneumatic wheel, can be made to jump over fallen logs. *—Canadian Press*

A Year of Frustration

As great as were the frustrations in the international field and in the lives of the individual free enterpriser of North America, these are matched by the fears and frustrations which beset the Republican Administration of the United States.

THE year 1953 was a year of frustration for the Price System administrators of North America. This condition applied to all major fields of Price System interest — foreign affairs, internal economy, and politics. Although the statistical reports indicate that 1953 was in many ways the most prosperous year American business had ever known, the reports do not accurately reflect the sentiments of the business administrators. For the frustrations were not so much on the 'tactical' level as they were on the 'strategic' level. That is, the detailed surface indications were relatively minor in their disappointments; but the major general trends are all headed toward an impasse, from which no one sees a positive way out under the Price System.

One of the most aggravating frustrations was the Korean War. The eyes which once had looked greedily across the Yalu River into Manchuria were growing tired and worried as the most vicious assaults of our Army, Navy, Airforce, and Marine Corps were stymied in the mountains of Central Korea for month after month. The eager anticipations of an early victory 'faded away' as triumph turned into retreat, then a stalemate, and finally a virtual defeat, and as the morale for fighting, both in the Armed Forces and at home, became increasingly more difficult to maintain. Truce was stalled as long as it was possible to do so; for, both the American economy and the military planners 'needed' the Korean War. American intervention in Korea—on behalf of 'peace and freedom'—had brought a change to that land; but it was not a change that anybody liked (except, perhaps, those afflicted with chronic sadistic psychoses), and it certainly did not contribute to either peace or freedom.

On the other side of the world, the Premier and dictator of Rus-

sia, Joseph Stalin, died; and there were hopes in the West that an internal struggle for power would develop that would fracture the solidarity of the Soviet Union and cause the political disintegration of the Bolshevik Party. Instead of that, the Russians proved to the world that they, too, could have a change of political administrations without a significant change in their national policies or behavior. In neither Russia nor America had the time c o m e for a change. The death of Stalin, however, did cause a certain amount of bewilderment to sweep over the strategic planners of the Cold War on our side; for, the maneuvers that had been tailor-made for the Stalin regime had to be held in abeyance to permit the planners to see what new facets would show up under Malenkov.

In America, the b i g business corporations had just made the most grandiose profits of t h e i r history and in the process proved that two of their chronic propaganda utterances should receive top consideration for the half century's biggest lies, namely: 'Machines Make Jobs' and 'more efficient production means l o w e r prices for the consumers.' It is now plain for all to see that machines make jobs scarce and that more efficient and cheaper production techniques merely result in higher costs to the consumers and greater profits to big business. But the year has not been an unmitigated joy to the greedy plunderers of the economy. Intuitively they realize that 1953 was the last year of the Big Loot. The fondest dreams of a Big Business Paradise had come true only to reveal that the Paradise was ephemeral and not eternal in its glory.

Likewise, the farmers of North America, who had never 'had it so good,' learned to their sorrow that all good things must come to an end—under the Price System. In spite of the rawest f o r m of government 'paternalism,' f a r m p r i c e s skidded downward. The 'little farmer'—that historical and traditional backbone of the nation and its economy—was hardest hit of all. His n u m b e r s had been shrinking rapidly and the big agricultural corporations were squeezing him out. Now he has become a vestigial anachronism, more of a social nuisance than a blessing. Economic planners are questioning whether f u r t h e r attempts should be made to save him, or

should steps be taken to eliminate him altogether. Nobody appears to be positive in the conviction that he has any future on this Continent; although the politicians continue to indulge him because of his vote. The rugged individualism that had usurped and pioneered a virgin continent—represented by that little semi-anarchic center of hard work, thrift, and stern discipline, the small farm—soon is destined to be no more; not because anyone in particular willed it or voted for it, but because the new technology has created a whole new era in social concepts and ways of doing things.

Along with the little farmer, the little craftsman is on his way out. He was only one step removed from the soil in the days of our 'primitive' economy; and, like the little farmer, he performed a useful function in his day. However, now, the big machines can do anything he could do and do it better and ever so much faster.

The little individualist who seeks to pilot his own craft on the social and economic seas must stay out of the field of production. He has only one recourse; that is, go into business for himself. However, the little businessman, in this day and age, performs no useful function and has no excuse for being, except that one must 'make a living' under the Price System; and parasitism is one way of 'making a living.' The prospect of success as a little businessman, which seemed to shine so brightly at the war's end, now is very much dimmed; and tens of thousands of little businesses are being liquidated — through mergers, sellouts, bankruptcies, and just plain liquidations. For lack of anything else to do—to 'make a living'—there are thousands of hopeful new enterprisers entering the small business field to replace, in part, the casualties. But most of these will not endure, many of them no longer than the time it takes to spend the money they borrowed to 'get started.'

Beyond the small businessman is the small salesman. He can 'get started' with little or no capital. All that he has to do is compromise his intelligence and integrity to the lowest level that it is possible for one to go without it appearing too illegal. But the main trouble with salesmanship is that it, like so many other things, is plagued with abundance; in this

case, an abundance of salesmen. Salesmanship, being the last refuge of the small free enterpriser, is oversupplied with personnel, which, through hope or desperation, drift into it for lack of anywhere else to go. The easy selling of the postwar days is gone; and deception and aggressiveness have to be developed into fine arts in order for one to outsell the competition and become a 'success.' The Year 1953 put the kibosh on salesmanship as an easy and preferred way of 'getting ahead' or even 'making a living.' The customers, who could be clipped for an extra 'take' under the counter a few years ago without any special art of salesmanship being applied, now require the utmost in the techniques of selling plus an 'under-the-list' discount.

With the capital goods industries of the United States and Canada expanding at a rate in excess of $25 billion per year, plus a Cold War going on and a profligate little hot war, also a worldwide give-away program, anybody could get a job doing something, usually with overtime. Married women flocked into the employment field—to supplement the family income in an effort to keep up with the inflation or to pay for all those high-priced labor-saving devices with which they had loaded down their houses. Unskilled labor often was paid as much, or more than, certain skilled or professional work. Nobody in America was called upon to suffer for lack of opportunity. This development reached an unhappy state in the latter part of 1953, though. First overtime hours melted away, then regular time started to become reduced or intermittent, and finally, the workers by the hundreds of thousands were given full time in which to contemplate the 'spiritual side' of things (which both Eugenio Pacelli and Dwight D. Eisenhower assure them is more important than the crass 'material side' of things — such as food, clothing, shelter, and cigarettes). The cushion of unemployment compensation is inadequate to supply the physical requirements or to satisfy the creditors, but it is enough to worry the politicians who blithely collected it from the payrolls and hoped they would never have to give it back.

North America has the highest per capita income, achievable

with less effort and less discomfort, of any area and any time. It has a superfluity of machines, with a huge capacity for producing bigger and better machines. Its warehouses, caves, surplus ships, and other containers are overflowing with the good things of life ('material side,' that is). Even luxury gadgets, like stylish automobiles, are in lavish supply. In fact, it is very inconvenient at times to find places to drive the new cars, or even to park them. Yet, a major automobile producer is engaged in a nationwide advertising campaign, urging the public to put two of its cars in every garage, on the same principle as that which persuades each member of the family to have a private toothbrush in the bathroom. There is more, and more luxurious, housing per capita than any other continent has ever had. Yet, the people of North America are becoming frustrated with their abundance; for, they have not developed a technique for living with abundance, and they are still trying to 'make like' they have a severe scarcity of everything.

America's business success has given its top administrators a 'big-shot-itis' psychosis. They feel that it is their 'destiny' to go around the world and push other people around to suit their whims. The slick magazines which they distribute by the millions of copies are featuring illusions of an America-dominated world by 1975. They are confident that they have the 'siren song' which will enchant the minds and aspirations of all men. They can't understand why it hasn't worked better than it has to date. They send their ambassadors and salesmen around the world to seduce the 'natives' and the 'natives' show contempt for them, if not overtly at least covertly. They can explain it to themselves only on the basis that Satan and his disciples are actively working against them. Only on this basis can they conveive why 470 million Chinese responded negatively to their lures, why the people of south Asia are cool if not hostile to their 'American Way,' why eastern Europe rejected their overtures, and why Western Europe is suspicious of their motives. So they have turned loose their witch hunters in an effort to track down the heretics.

One nation after another—among those who still pose as friendly—are rejecting gifts of

American splendor, not wanting to be burdened down with 'white elephants' they can't afford to maintain. The cost of pretended friendship among the countries of the world is going up, and there are fewer takers. The United States is so desperate for friends that, in order to 'buy' a poverty-stricken protege like Pakistan, it is willing to antagonize India, who has long been wary of our advances—especially after the partition which we helped the British impose upon her as the price for independence. Outside of a moderate success in seducing the Catholic fascist nations and a more dubious success with the Mohammedan fascist nations (plus Japan, Formosa, and South Korea, which were 'reduced' by force of arms and Christian missionaries), we have no trustworthy friends (real or expedient) in the world. The English-speaking nations accept us as part of the 'kinfolk,' although with a contemptuous reserve, lacking in admiration.

The whole foreign policy and action of the United States is based on the proposition that the Soviet Union is intent on a military conquest of the world. Although, one inducement after another has been offered the Russian government to start the attack, no attack has materialized. In fact, the Russians have shown a remarkable degree of restraint in the face of the aggressive gestures which have been made in her direction, of which the Truman Doctrine was one of the most bellicose; to be matched in virulence, if not in recognition, by the recent declaration of Secretary of State Dulles that in effect, any 'aggression' in the world would be answered by a rain of atomic bombs upon the population centers of the Soviet Union. Other semi-official spokesmen have hinted that the 'answer' might better be given **before** the 'aggression' takes place. The Russians have displayed a very frustrating 'intransigence' about starting anything that our war-lovers could capitalize on. And we are led to ask this awful question: 'What happens if Russia never attacks?'

The American war promoters are hoping that this Continent, with its head start in atomic weapons, has the edge on the Soviet Union militarily and that our 'allies' are an adequate counterbalance for the 'Peoples Democracies.' But nobody in a position

to know thinks that we have a distinct military advantage and there are many who question that we have any advantage at all. Certainly, Russia has the geographical advantage, being one huge contiguous area while our bases are scattered all around the world. Furthermore, the Russian situation is vastly superior to what it was at the outbreak of World War II. The Cordon Sanitaire has been destroyed and she is now surrounded in the most part by a Cordon Rouge whose guns point outward, not inward.

One attempt after another to gain a border on the Soviet Union has met with frustration. That beautiful long frontier between Manchuria and Siberia slipped out of our hands. Eastern Europe was lost to us, because the Russians occupied it militarily during the war and we were unable to finesse them out of it. Our most ambitious hopes at the moment are pinned to the 'soft' Mohammedan underbelly of southwest Asia, primarily Turkey, Iran, Afghanistan, and Pakistan. But, for these 'allies,' the price comes high. They are in no sense 'our kind' of people, being neither white, Christian, nor 'civilized.' But for the present we are willing to 'go native' for the sake of those nice frontiers on the Soviet Union. However, the 'Persians' have had a long history of smart trading; and while they will make almost any kind of a deal if the 'price is right,' they mentally reserve the right to make other deals if it suits their advantage. Today, the 'effendis' may cater to Uncle Sam like poor relatives to a rich uncle, but tomorrow is another day.

The greatest shock to our pride and arrogance came last year when the Russians exploded one or more 'thermonuclear devices' of their own. It was such a frustrating event that our 'top brass' kept the information secret from the American public until after the Russians announced it to the world; then, after a few angry denials that the report was authentic, they sheepishly admitted that it was so. This event is considered so important that many news analysts list it ahead of Stalin's death as the most significant event of the year.

The United States had amazed and alarmed the world in 1952 by setting off a 'thermonuclear' explosion that melted away an island of the Pacific for 'several

hundred feet' below the surface of the water with an energy release 'decidedly in excess of five million tons of TNT.' It was such a terrible display of destructive force that no pictures of it have yet been released to the public. Within a year, the Russians casually announced, 'me too,' and our war planners were compelled to make an 'agonizing reappraisal' of the situation.

No doubt, there are nice Christian Americans in high places who are fervently wishing for an excuse to demonstrate—on the crowded populations of China or India—how many times more destructive such a 'device' is than the one we demonstrated over Hiroshima. And why, you may ask, would they want to make such a 'demonstration'? Why, to prove to the world that we stand for 'Peace, Freedom, and the Dignity of Man—under God' (unquote). Perhaps it is to avoid any 'moral restraint' in such demonstrations that these same Christian gentlemen have prevented the United States from signing the anti-genocide pact of the United Nations; for, it would be rather awkward to justify the 'demonstration' of a 'thermonuclear device' on a populated area if you are committed to distinguishing in your mass slaughters between the 'clean' and the 'unclean.'

It is probably the restraint of retaliative potential, as well as the lure of huge population densities, that prompt these Christian gentlemen at this time to direct their threatening remarks more toward China than toward the Soviet Union (with occasional sidelong glances toward India).

The present arms race is only one step from the development of the absolute weapon — a 'device' that could explode the whole earth and turn it into a stellar nova. When that stage is achieved with recognized probability, any talk of war must be treated as a symptom of the most dangerous type of insanity; it must be regarded as a maniacal conspiracy to destroy the earth and all its people—regardless of its source. Any bragging about a 'retaliative force capable of meeting any and all aggression' would have a very hollow and ghastly ring, indeed; for there could be no hope of victory for anyone—only mutual annihilation.

Perhaps the most aggravating frustration of 1953, from the view-

point of the professional militarists and international 'statesmen,' is the final disappearance from sight of the respectable little wars, fought by officers and men (spit) with 'traditional' weapons and regulations — at least insofar as any wars between major powers are concerned. Wars between major powers are approaching a situation analogous to two individual opponents fighting it out in a locked room with flasks of nitroglycerin as their only weapons.

As great as were the frustrations in the international field and in the lives of the individual free enterpriser of North America, these are to be matched by the fears and frustrations which beset the Republican Administration of the United States. Not since the dark days of the Herbert Hoover administration has the future looked more dismal. Politically, World War II was an Aurora Borealis of hope in comparison—a brilliant light that guided the Democratic administration, after so many years, out of the depression blackout and showered down upon the populace enough manna in the form of debt tokens to restore their confidence in the Price System and vote Republican.

To find oneself in charge of administering the birth of a depression is the least enviable of circumstances for a politician to be in. Especially after making dramatic and extravagant campaign promises of bigger and better prosperity ahead for everyone. To argue in defense that one merely espoused a pregnant situation sired by the previous administration is insufficient to relieve one of legal responsibility or popular blame. The Republican administration now finds itself in that very same situation. Four dreaded 'Horsemen'— Surpluses, Depression, Unemployment, and Revolt—are seen riding roughshod over the landscape in the crystal balls of the political economists. The voters had given their 'mandate' to the Republican Party on the slogan that it was 'Time for a Change.' The Year 1953 turned out to be one of disappointment and impending frustration for these same voters.

Foreign trade has fallen off to a dribble, with only huge imports of petroleum to brighten the statistical reports. Freight car loadings are down. Industries are cur-

tailing operations and employees are being discharged by the hundreds of thousands. The government and military are making gestures toward reducing expenditures (except in the instance of salaries for congressmen; the poor overworked dears feel that their salaries and allowances should be nearly doubled). No war is in sight. Government revenue is falling off. The federal debt ceiling must be raised immediately, then raised again later. The public is heavily burdened with private debt, plus homes and gadgets it can't afford to maintain on reduced hours of work or unemployment compensation.

It is true that American Big Business made unprecedented profits during 1953; but 1954 is another year and prospects do not look so rosy. In fact, the guideposts indicate that the biggest dividends will go to the 'prophets of gloom and doom.'

The brightest and only optimistic light on the horizon of the coming year is that of the New America which Technocracy has been shining over this Continent for more than twenty years. It lights the one gateway to a future which is without pitfalls, blind alleys, and loitering thugs. This light alone can shine bright in the presence of Abundance, Peace, and Freedom from Toil. It will show the way for you to travel forward as the alluring lanterns of the Price System dim and fade away. **—Wilton Ivie, CHQ**

★ AN ELECTRONIC BRAIN that can route a letter from Vancouver to Montreal in a fraction of the time it takes to hand-sort it may be operating in Vancouver Post Office within three years.

Post office officials announced here the 'thinking machine' should be available shortly after Vancouver's new post office is occupied.

The almost wholly automatic machines, designed by Deputy Minister W. J. Turnbull, are designed to relieve post office employees of a heavy memory load.

The first step in electronic sorting will be stamping the back of the envelope with a coded version of the address, translated into a pattern of ink dots.

The postal clerk who does this stamping, the only manual effort required in the machine's process, will be fed the mail on an assembly belt.

From the stamper, the letter is kicked through a conveyor to an electric 'reader.'

The reader will flash the code to the brain of the mail-sorting system, where the names of all post offices in Canada will be recorded magnetically. In one-thirty-sixth of a second the brain will tell the reader what bin to shoot the letter into. The brain will be able to route 130,000 letters an hour.

A similar machine will receive incoming mail and automatically sort it into city routes. *—Mac Reynolds in Vancouver Sun*

'The Old Spectre Revived'

The 'automation' of our production facilities is well under way and is serving notice on the North American Continent that the paramount problem of our time is insinuating itself into our everyday lives and will soon scream into our ears for attention.

READING the news and views of various writers in magazines and papers every day, it is only rarely that material of outstanding value can be found. Because of this trite condition, appreciation should be voiced by those who come upon an unusual article dealing objectively with fundamental problems of our time. In the **U.S. News & World Report** issue of December 4th, 1953, there is not only one item but several which are worthy of comment. Certainly they have been read with considerable interest by serious-minded subscribers.

On page eight under the title, 'Washington Whispers,' an item reads: 'Harold Stassen, Director, Foreign Operations Administration, discovers that a growing number of policy makers in Government favor revived trade with Iron Curtain Countries.'

If this is true, and is not just another political manoeuvre, it becomes very significant indeed. It indicates a fundamental change in attitude toward the progenitors of the current red herring which odor has attained such a degree of malignancy that its abandonment may soon be dictated by expediency. It looks like the beginning of a sell-out of the Truman Doctrine from which less advantage may accrue from its continuance than from its abandonment.

The rate at which inroads are being made upon effective markets by competing exports, and 'adjustments' in North America, may have some influence upon the antipathy with which we view the world's most horrible example as a customer. If the Soviet Empire suddenly presents an outlet for embarrassing surpluses, it would not be too surprising if the expediency, which is closely associated with politics and business, would permit the means to be found for overcoming our revul-

sion at dealing with our cold war enemy. We can find examples where such forces have perpetrated a reversal of policy in our recent history, where those who were enemies are friends and allies. This trend will bear watching in view of the diminishing market at home and abroad.

On page 13 will be found related statements which appear to contribute further evidence that such a change may be taking place. 'World affairs, gradually will seem less important than domestic' and 'U.S., wary, will tend to become isolated,' 'France —Italy—Britain will want to explore the potentialities of doing business with the Russians' and 'Expanded trade with Russia, opposed by U.S., is to develop,' 'China trade, like trade with Russia, will revive and expand'.

Yea. Verily! Never let it be said that a little thing like eight years of brain washing with the red herring would stand in the way when a new strike has been made and the prospectors are staking claims right on the spine of the herring. After all, aren't we the greatest nation in the world when it comes to business and commerce? We should let those foreigners do us out of a sale ?

The realization that deflation is continuing is beginning to roost and the cackling is competing with the cacophony of the would-be crusaders and their victims. Every article on the subject strikes a common note. The evidence is becoming so profound that they are all bending over backward to give reassurance. The Republicans and Democrats both recognize the trend, but the party presently calling the turn is defending its archaic belief and its confidence in the ability of private investment to pull itself up by its own horns. How phoney can we be ! How dumb can we get !

On page 101, Mr. Colin Clark is called one of Britain's most eminent economists. He is one of the few who recognize the direction of the trends in the U.S. economy. He points out that with over-expanded business and inventories, the pump must be primed in time or such priming will have little or no effect because of the slowness of the process. He offers several suggestions for relieving the trend such as investment abroad but recognizes the possibility of isolation from without.

As one of the most eminent economists, he has gone as far as we could expect the best to go which is only a step toward dealing with fundamental causes. However, he still falls far short of recognizing the demonstrable physical trends so apparent to the student of technological trends. It is not too difficult to recognize the reason why pump priming, too late would be too little, as even if business were stimulated by more sales, the effect at this time would not be more employment. The reason for this is, of course, the private investment of 26 billion dollars a year for the past eight years and the resultant increase in the efficiency of plant and equipment. This means that additional produce can be obtained by operating the new plant and eliminating the old plant from the scene altogether. The process is accelerated by an 'adjustment' period. The consequences are more production with less pay and fewer sales. This has been apparent to a few for so many years but that it is still not apparent to the 'elite' is shown in the article appearing on page 41, 'Push-button Plant: It's Here.'

In true literary romancing the article points up the wonders of the automatic plant and the marvels of electronic control, the mechanical 'brain,' the miles of wire and the personalized units which 'obey' the 'brain.' It shows how the various groupings of equipment produce twice as much as the equipment it replaces. A general statement that 'hundreds' of men will be required to inspect, repair and test the new equipment implies that displacement is minimal. Using a chart, displacement is demonstrated conclusively where nine workers drilling holes in the crankshaft with the new equipment replace those which required 29 machines and 39 workers. Further evidence of displacement is given in describing the reaming and cutting on a rocker-arm support. It used to be done by five operators at two machines producing 38 pieces per man-hour. Now one operator and one machine turn out 750 pieces an hour which, the article states, is 20 times faster. Also mentioned is the significant fact that there is a saving in floor space as high as 40% as fewer machines are needed in an 'automation' factory. Still further, the raising of load factors by higher utilization of

equipment is pointed out with the potent remark that human limitations no longer impede the attainment of higher speeds.

After so eloquently describing the inevitable displacement which occurs, the author awkwardly rationalizes and seeks to disprove what has already been established by sublimating the offending conclusion with claims that employment is increased by displacement thereby raising the standard of living of the American people! No wonder we're developing a race of neurotics. We cannot as yet face the obvious reality even in the face of over-whelming evidence.

This process of automation and speed-up is taking place in all industries, not just the one. It is true that making more machines takes more work, but the new machines are taking the place of equipment which also had to be made. Replacements are faster and automatic requiring fewer for the same job. If this change is taking place in the plant producing the new equipment, then there are fewer men and machines required for the same amount of production not only in the one plant but also in the plant supplying the equipment and so on down to the raw material and the mines.

At one time when new equipment was made and introduced the displacement was more than offset by the increase in production and demand. Hence the conclusive arguments that employment increased in the automobile industry over that of the horse-and-buggy era. To pursue the same line of reasoning with today's installed capacity is the height of folly and stupidity.

Unless new outlets are found for more production, the end product is that awful spectre Technological Unemployment. The rate of increase for new markets must exceed the rate of displacement. Evidence, now very pronounced, indicates that the situation is vice - versa and becoming more vice-versa every day. The rate of displacement in the 'automation' process is the greatest we have known, whereas the rate of increase in new markets is the least we have known for some time and may soon be over the hill and on the down grade going 90 miles an hour. Maybe Stassen has muttered a mouthful. We'll do

anything to avoid having to face the problem.

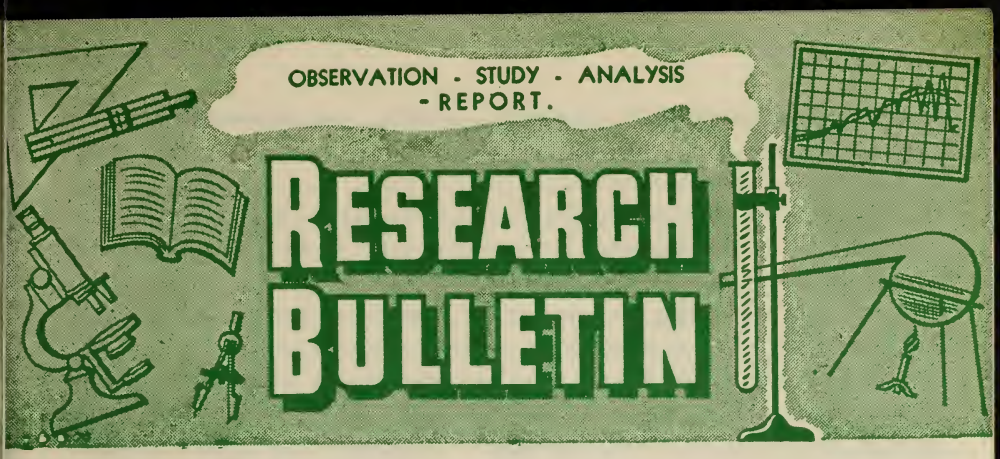
On page 24, another article entitled 'More Defence for Less Money' tells of a possible extension in the 'automation bug' to a branch of our society which has been the most prolific consumer of man-hours, the armed forces. Here again, the concentration of energy by technological application will, apparently, have a tremendous effect on the rate of displacement. It is pointed out that use of the new weapons in this atomic age would unable us to deliver more military might and destruction with much fewer men. This will entail considerable financial saving and, incidentally, would enable the Republican party to deliver at least one of its promises. It does not seem to be far removed from reality to state that political promises are made with a view to their vote getting potentialities rather than their feasibility or the requirements of the nation. The promise that there would be economy in the armed forces without loss of military might seem to be the most idiotic of the lot, but according to this article, is the one most capable of attainment.

One atomic gun, for instance could deliver as much destructive power as 10,000 ordinary artillery pieces. Think of the saving to be made in doing away with the need to make 9,999 artillery pieces along with their requirements of ammunition! Although it may be true that many men are required in the production of one atomic shell, does it take as many as to produce that much artillery and ammunition ?

One atomic bomber could do away with 1,000 ordinary bombers. One atomic torpedo might wreck a whole navy as effectively as a fleet of ordinary ships. One atomic mine or guided missile would do the work of thousands of ordinary weapons.

The savings here would undoubtedly be very great financially but the saving in manpower would be a great proportion of the total. The article points out that extensive use of such weapons would mean fewer shells, artillery pieces, carriages to move the guns, fewer ordnance plants, fewer supply units, fewer men to handle the guns and ammunition, fewer planes, pilots, mechanics, radar specialists and maintenance

(*Continued on page* 33)



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Robot Machines and Men

EVEN before the first published appearance of Frankenstein and his monster in 1818, not many years after the Industrial Revolution began, men began speculating fancifully on the horrors of a world in which machines conquer the men who build them. Now, with the development of new machines and new devices, fact for the first time appears to have at least a fighting chance of catching up with fiction.

Robot devices of amazing variety and versatility are already at work in homes, offices and factories. And now that the potentialities of the recently developed giant electronic computing machines are coming to be understood, many feel that we have already crossed the threshold of the robot age and that the years ahead will bring changes at least as far-reaching as those that followed the invention of the steam engine.

Man may still have the upper hand. But in a good many fields it's already beginning to look as if . . . **anything you can do, they can do better.**

Today's robots, as **Newsweek** has put it, 'do not fit the preconcep-

tion of clanking tin-plate manikins, teetering on stiff-pointed metal legs. They are swift and unobtrusive machines with no more overt glamor than a fuse box.'

No census of their numbers has been taken but, according to Gerard Piel in the **Saturday Review** (June 27, 1953), 'the evidence is strong that they now outnumber the human workers.' The millions of them at work in the economy range from the subway turnstile that knows a slug when it sees one to entire robot-run industries.

A glance through the advertising pages of any woman's magazine shows what robots can do around the house. Dirty clothes are transmuted into clean dry ones untouched by human hands. Refrigerators not only defrost themselves but one new model makes it own ice cubes without trays, dropping them one by one into a container like a hen laying eggs and automatically replenishing the supply when necessary. Stoves turn themselves on at a prearranged time, cook the dinner and turn themselves off, all without the help of the housewife, who can be miles away while the cooking is going on.

'Robots are a girl's best friend,' **House & Garden** recently headlined an article, which went on to point out that these kitchen robots 'not only shoulder woman's heavy labor, they practically think for her, making all kinds of working decisions far more scientifically than humans can.'

In industry, the robots have had an even more revolutionary effect. The entire telephone industry, for one example, is largely self-operating. Oil refineries have been even more robotized, to the point of dispensing with human beings almost completely. Crude petroleum is fed in at one end and emerges at the other in the form of a variety of finished, packaged products, all without human intervention.

'A few lonely men wander about the spectral monster doing supervisory or maintenance tasks here and there,' Eugene Ayres has described one of these plants in **Scientific American** (September, 1952). 'The plant is almost noiseless, all but devoid of visible moving parts . . . The human operators watch, they sometimes help or correct the instruments,' but they take over completely only in emergencies or, about once a year, when the plant is starting up or shutting down.

In these and in many other areas of modern industry, it is no longer a question merely of easing the task of humans. Robots do jobs that couldn't be done at all without them, for modern industrial processes often demand speed and precision far beyond the capabilities of a man with a tool in his hand.

Ayres tell of an Asian country which found this out when it employed a U.S. contracting firm to design a modern oil refinery. The officials of this country, 'which has an embarrassing surplus of manpower,' asked the designers to eliminate the automatic controls, so that some of the surplus could be absorbed. The engineers finally decided that it couldn't be done. 'It was not just a question of operating costs or efficiency: without suitable control instruments a modern refinery simply could not operate at all.'

In fact, we have become more dependent on the robots in our midst than most people realize. Gordon S. Brown and Donald P. Campbell of the Massachusetts Institute of Technology have described in one word what would happen if all of them should go on strike at once: Chaos.

The aristocrats of this robot world are the comparatively new electronic computing machines, which assume ther commanding position because they have begun to impinge on territory that man has always believed was exclusively his. They are often called mechanical brains, and with some justice, for they can do things that we previously thought only a man with a brain could do.

So far, these astonishing machines have chiefly been put to work performing complicated mathematical calculations. And they have performed superbly, for, above all things, they are fast.

The first of the all-electronic computers (called Eniac, for Electronic Numerical Integrator and Calculator), unveiled seven years ago at the University of Pennsylvania, was built to figure out firing tables for the Army Ordnance Department. Eniac was a comparative slowpoke that could add or subtract 5,000 numbers a second, multiply or divide about 50. Yet it could work out the trajectory of a shell in half a minute, as compared with 20 hours for a skilled human computer with an ordinary desk calculator.

And the calculators built since Eniac have far outdistanced it in speed of performance. Oracle (for Oak Ridge Automatic Computer Logical Engine), put through its paces in public for the first time last August, can multiply two twelve-digit numbers in one two-thousandth of a second. (It takes a man with a desk calculator about 15 seconds to multiply two ten-digit numbers.) And IBM's newest computer, the 701, does 16,000 additions and subtractions a second.

On the surface, these developments don't look particularly portentous. After all, the assembly line is an old story and automatic control devices, which date back as far as 1788 when James Watt invented a flyball governor to control the speed of his steam engine, are even older. Even completely automatic factories are by no means new. An automatic flour mill, which processed grain into finished flour without the touch of a human hand, was built near Philadelphia in 1784 and the Jacquard loom, controlled automatically by punched p a p e r cards, made its debut in Paris in 1801. And devices to help men tally figures faster than they could manage by counting on their fingers and toes date back many centuries to the invention of abacus.

But the robot devices are not as innocent as they might, at first glance, appear. Taken together, these many gadgets form a pattern, John Diebold has written in **The Nation** (September 19, 1953), 'and it is a pattern that will have more meaning for our individual lives and for our collective future than the double-mushroom shape of atomic explosions.'

They are 'only the first hardware' of what many have described as a second Industrial Revolution. As the first Industrial Revolution substituted machines for muscles and liberated men from the most back-breaking and degrading physical drudgery, so, it is felt, the second will turn over to the machines the mental drudgery.

As Harry M. Davis has put it in **Scientific American**, 'The first phase of the Industrial Revolution meant the mechanization, then the electrification of brawn. The new revolution means the mechanization and electrification of brains.' **—Platform, October, 1953**

A New Metal, Zirconium

WASHINGTON.—An obscure and supposedly rare metal, five years ago almost a mineralogical curiosity, has become one of the cornerstones of the atomic age.

Its production has increased from a few ounces annually to many tons. Its cost has been reduced from $250 to $30 a pound.

This metal is zirconium, large amounts of which are essential for atomic reactors. The story of its remarkable rise in half a decade is told by Westinghouse engineers who played a leading part in the development. It was considered necessary for the new atom-power submarine engines now under construction for the navy.

Actually, the Westinghouse engineers point out, zirconium never has been a rare metal. The difficulty has been in extracting it from its ores.

Chief of these is the golden-colored crystal zircon, well known to students of gems. Zircon occurs in sands in many places in the world. Largest present sources are the sea coast sands of Australia, India and Brazil, but the United States has abundant supplies in Florida, Oregon and Idaho. This country's reserves of zirconium-bearing ores have been estimated at between 4,000,000 and 14,000,000 tons.

Pure zirconium metal is like stainless steel in appearance. It is ductile and malleable. It can be rolled and shaped by essentially the same methods used with steel and can readily be welded in an inert atmosphere, such as helium. It has an unfortunate affinity, however, for oxygen when heated. Impure zirconium is hard and brittle and has little value.

The pure zirconium metal, the Westinghouse engineers point out, has several interesting properties that industry can use to good advantage when costs are brought down. It is, for example, almost completely rust-resistant, the engineers declare.

It is not attacked by ordinary atmosphere or by salt or fresh water at ordinary temperatures. It is resistant, the Westinghouse engineers have found, to most acids, especially hydrochloric acid at room tem-

perature. These properties have made it a favorite with surgeons for use as pins, screws and plates for bone repair and for surgical instruments.

The rare metal tantalum has been much used for these purposes. Zirconium, however, is lighter, its corrosion resistance is superior, it wears better, and even now its cost is a trifle less. Later it may have an extensive use in tank linings, pipes and valves.

It is a useful alloying agent. The strength of copper is doubled by the addition of 7% zirconium. Nickel containing up to 10% zirconium produces a hard alloy that requires no tempering and is useful in high-speed machine tools. Small zirconium additions to certain steels greatly increase their strength. Sometimes a zirconium-nickel alloy can be used as a substitute for tungsten in cutting tools. A small amount added to magnesium greatly increases corrosion resistance.

Finally powdered zirconium burns, even spontaneously, with an intense white light and considerable heat. Before the days of photoflash lamps, in fact, its chief use was in flash photography.

It also has been used to a small extent for flares. This does not mean, however, that it is dangerous to handle, the Westinghouse engineers point out.

In solid form zirconium is entirely safe. It can be machined as readily as stainless steel, though care must be taken with accumulations of small chips. It can be safely forged and rolled at red heat.

—North American Newspaper Alliance

Automatic Factories

AT its sprawling plant in Bridgeport, Conn., Columbia Records Inc. recently made phonograph records in two surprisingly different ways. On the third floor, 250 men in grimy work clothes labored amid the ear-shattering hammer of hydraulic presses and the stench of burned rubber. On the floor below, four neatly dressed men stood by 16 softly purring machines. The four seemingly did nothing but watch

the machines work. Yet in an eight-hour shift, each turned out about five times as many records as the sweating men on the floor above.

The new Columbia record line is the latest 'automated' production line in U.S. industry and a prime example of the trend toward automatic factories. For Columbia, it means that skilled press operators no longer need go through six steps to make a record. The new machine does the job in an uninterrupted flow; it automatically feeds the right amount of plastic into a mold, cools it, and ejects the records. Each of the machines costs $25,000 (versus $3,000 for an old-style press), but they make better records about 30% faster, and four men can watch over the entire operation.

The record industry is only one of hundreds turning to automatic production. Such industries as oil, chemicals, and atomic energy, where materials are dangerous for men to handle but easily adaptable to machines, have necessarily become almost completely automatic. Some are even using TV to keep an eye on remote-control processes. The army is building a completely automatic TNT factory in Joliet, Ill., while work on an atomic engine for the AEC includes such contraptions as General Electric's 'O-Man,' a 15-ton remote-controlled claw to handle radioactive material. (It can screw a nut on a bolt, and can even be made to pick up an egg.) Oil refineries, which used to crack oil by laborious batch methods, now do it in one steady, automatic flow; a few skilled workers sit at a master-control panel, guide oil through many intricate steps to high-octane gasoline, or any one of a dozen other major petroleum products.

Other new automatic processes include :

A push-button hide-tanning process developed by the Colonial Tanning Co. and just installed at its Milwaukee plant. Instead of curing hides by a great deal of manual work, Colonial now has a conveyor belt to carry hides past splitting and shaving machines, uses automatic controls to mix acids and oils in correct proportion to tan them, and still more automatic controls to circulate just the right amount of warm air in drying rooms to finish curing the hides. In the past, it took six men eight hours to tan 50,000 square feet of leather; now two men do a better job 20% faster.

A new Ford Motor Co. plant in Cleveland, where rough engine-block castings are fed into one bank of 26 linked machines which hone, broach, drill and prepare the blocks for assembly, all automatically. Then the machines feed the blocks out the other end on conveyor belts, where still other machines and workers install pistons and carburetors. Formerly 117 machinists needed 4½ hours to finish an engine block; now with 41 men, the machines do the work in less than three hours.

A 'record-playback control' developed by General Electric, which promises to cut much of the time required for fine machining. The control works something like a home recorder. A skilled operator records all the machine motions required for a machining process on a tape that is hooked up to the machine. When the tape is played back, the machine faithfully repeats the original motions down to the last detail. The first such unit will go to the Giddings & Lewis Machine Tool Co. at Fond du Lac, Wis., where it will be used to turn out self-reinforced skins for jet planes.

The greatest immediate new field for automation is in electronics. Raytheon Manufacturing Co.'s radio and television division in Chicago already has an automatic radio chassis assembly line geared to 1,000 units a day, runs it with two workers instead of the 200 formerly needed. General Electric, Motorola and RCA are all working toward more automatic production. Instead of turning out radio circuits assembled with wires and solder, they are working on printed circuits which can be manufactured much more cheaply and rapidly.

★ BUFFALO, N.Y.—That daily diversion of millions of Americans—the elevator operator—is heading for extinction.

It won't be long before that shapely female or witty male operator becomes a part of the dim past if we catch the significance of a display by the Otis Elevator Company here recently.

New engineering developments have made possible the first entirely automatic electronic elevatoring system in history. In a miniature reproduction of a 10-story office building, the Otis company reveals how an electronic 'brain' enables four elevators to 'think for themselves' in analyzing passenger traffic.

The system adjusts itself automatically to handle any one of six different traffic patterns throughout the day. It provides for efficient handling of the morning rush when 'up' traffic is at a peak, restores a balanced program between peaks, sets the system again to handle the lunch-hour volume, and switches to a down-peak program at closing time. —*United Press*

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

THE FIRST COMMERCIAL TRANSistor powerful enough to replace vacuum tubes in control devices for industrial machines has been announced by Minneapolis - Honeywell Regulator Co. The size of a thimble, it is 100 times more powerful than any transistor yet available, said Honeywell, and can handle 20 watts of current.

THE VIGORELLI 'ROBOT,' A SEWing machine that can change its pattern of stitch without stopping or slowing down, has been shown off in Manhattan. Hailed as 'the world's first completely automatic home sewing machine,' the machine also has a knob for selecting any of ten different types of embroidery stitch.

THE NEW AUTOMATIC PINSPOTting machine developed by American Machine & Foundry Co. will not only replace pin boys but will enable bowling alleys to stay open 24 hours a day. The firm has already installed more than 800 of the devices and plans to step up production to 250 per month this year.

FOR TRAVELLING BUSINESSMEN, Travel Talk Inc. put coin-operated Dictaphone machines into trial operation in Cleveland and in London, Ontario. For 50 cents the user can dictate into the machine for 15 minutes, gets a Dictabelt record and a stamped, air-mail envelope to send it to the home office for transcribing. Travel Talk expects to have 2000 machines installed within two years.

AN X-RAY MACHINE THAT SHOWS up tiny insects in stored grain has been announced by duPont. Using the machine, one man can inspect 80 grain samples a day, versus 25 to 50 samples with the old method of cracking open kernels and floating the particles in mineral oil or gasoline.

AN AUTOMATIC WIRE STRIPPER being introduced by H o l u b Industries Inc., of Illinois, is said to eliminate triggers, cocking and other holding devices. Called the Hi-Speed Wire Stripper, it is designed to strip all types of building and fixture wire with a single squeeze of the handles. After the wire is stripped, a concealed cam holds the jaws open until the wire is removed, preventing the jaws from snapping back and crushing the wire.

FIRST INSTALLATION IN B.C. OF a mobile bake oven for fast drying of repainted automobiles was recently put in-

to operation at Bodie Collisions Ltd., of Vancouver. Adoption of this factory method of drying is a major innovation in the repair trade. It permits a stepped-up production capacity five times greater than was formerly possible. Former air-drying methods required about 24 hours per car; present methods, using the mobile bake-oven process, reduces the time required for drying to about 45 minutes.

TRAMP IRON IS REMOVED MAGnetically from coal used at the Oak Creek Power Station of Wisconsin Electric Power Co. Magnetic separation prevents damage to expensive crushers and other equipment. To do the job Sterns Magnetic Inc., of Milwaukee, has built what it claims is the world's largest electromagnetic pulley. The unit is 60 inches in diameter with a 48-inch face.

AUTOMATION — THE AUTOMATIC handling of work-pieces between progressive operations — is being widely applied at the Oldsmobile division of General Motors Corporation, Lansing, Mich. Particularly impressive results have been obtained from this program in the handling of hood panels, bumper bars and other large stampings. Means have been provided for automatically loading, unloading and transferring such parts, the results being substantial increases in production and greatly improved safety conditions.

ONE OF THE MOST MODERN automatic chip processing systems in the United States has been installed in Chrysler Corporation's industrial and marine engine plant at Trenton, Mich. With this system, turnings from the various machine tools are crushed, cutting oil is extracted, and the chips are pneumatically conveyed to storage hoppers located on a railroad siding — all automatically.

AN AUTOMATIC ELECTRONIC temperature-monitoring system designed to eliminate engine shutdowns due to bearing 'burn-outs' has been developed for the U.S. Navy by the industrial division of the Minneapolis-Honeywell Regulator Co., Philadelphia, Pa. The heart of the automatic system is an electronic scanning instrument capable of continually checking temperatures in various critical locations.

Thermo-couples, linked to the 'scanner,' are embedded in 40 bearings. The scanner automatically reviews the tem-

perature at all 40 points every 10 seconds, making six complete checks of each point every minute. When a hot bearing is detected, an alarm sounds a light glows to alert the attending seaman. A selector switch reveals the exact temperature of the bearing in question so that correction may be made before a dangerous situation is reached.

THE FIRST ALL-ELECTRONIC digital computing commercial system in Canada is being installed at A. V. Roe Canada Ltd., Malton, Ont., to speed aircraft design calculations. Specifically, the unit will be used for solving problems concerned with the responses of an air frame to control movement and external disturbances. Company engineers state that the machines will be able to do the same work in two hours that an operator would accomplish in seven months, working eight-hour days.

THE WORLD'S LARGEST AND most powerful turbine-generator, which Westinghouse will build for the Detroit Edison Co., will be as big as two six-room homes. The giant unit will consume 15 times its own weight in steam every 24 hours. Its power output of some 350,000 horsepower will be enough to supply the electrical needs of a city the size of Cincinnati or Dallas.

BALTIMORE'S BUSTLING ORE traffic got a boost recently when the Canton Co. put into service a new unloading tower, said to be the fastest on the Atlantic seaboard. The new unloader can discharge up to 1900 tons an hour

during 'free digging.' Total capacity of the three unloaders on the Canton Co.'s pier is now 5,000,000 tons a year.

A BEAN-SIZE PHOTOCELL (ELECtric eye) has been made of germanium at General Electric Research Laboratory in Schenectady, N.Y. Said to be more sensitive to light than vacuum photocells a hundred times larger, it is particularly suited for regulation and monitoring of flames and heating devices.

A DANGEROUS TASK IN THE LOGging industry may bow out with the development of an automatic pair of tongs. The device sets its tongs in the log for lifting, then automatically kicks out the tongs when slack comes in the loading line. With conventional equipment, a worker gets the hazardous job of loosening the tongs; he risks having the log roll on him when it is freed. The manu-

facturer is Automatic Tong Co., of Portland, Ore.

MACHINES INSTALLED AT THE Ambridge, Pa., plant of the Spang-Chalfant Division, National Supply Co., are equipped with ingenious devices actuated by X-ray to determine the wall thickness of steel pipe. Paint is automatically sprayed on any areas of the pipe which are less than the required thickness. The paint marks permit accurately cutting off only the under-gage sections at the ends of pipe as scrap. In this way, pipe of the required wall thickness is not wasted. Also, the possibility of having to take an additional cut is eliminated.

AN AUTOMATIC DEW POINT CONtroller that regulates the dew point in controlled - atmosphere metal - treating furnaces has been developed by Ipsen Industries Inc., Main Street, Rockford, Ill. This self-contained unit operates electronically, and continuously records and controls the furnace dew point.

Business and Finance

BUSINESS FAILURES ARE ON THE upswing, the latest report by Dun & Bradstreet of Canada Ltd. shows. A total of 241 Canadian companies hung up the 'out of business' sign in the three months ended September 30, 1953, compared with 153 during the same period of 1952.

Total liabilities of the firms that failed rose from $3,777,000 in 1952's third quarter to $6,652,000 in the latest reported period. In the previous quarter—the three months ended June 30, 1953—239 concerns failed, leaving liabilities amounting to $7,773,000.

ANOTHER BOOST IN INSTALLment-plan buying pushed Canada's consumer credit bill to a peak of $1,772,000,000 on September 30.

In the 12 months ending on that date, the outstanding credit bill had made the biggest jump in history—a rise of more than $400,000,000 as Canadians increased purchases of automobiles, household goods, clothes and other items on easier credit terms.

This heavier credit buying has caused concern among financial men. Bankers, particularly, have warned that shopkeepers may be selling too much on terms. In time of difficulty they might have trouble collecting debts and paying off bills.

★ RICHMOND, Calif.—Experiments indicating that it soon will be feasible to produce fresh water from the ocean in useable quantities at reasonable cost were recently reported by two University of California engineers.

A solar still which for more than a year has been producing 100 gallons of fresh water daily is being improved with the expectation that it will yield 160 gallons daily, said Everett D. Howe, associate dean of the college of engineering.

Another machine, called a low-temperature-difference distiller, also is in operation and is being groomed to produce 2000 gallons of pure water daily from waste warm water such as would come from industrial plants.

A third type of experimental unit, designed to utilize the heat wasted by diesel engines to distill water, will be in operation shortly, Dean Howe said.

—*Associated Press*

(*Continued from page* 20)

men. There would be fewer training establishments and personnel.

Perhaps this trend may not be evident for some time, but, according to the article, there is a great deal of serious thought being given to plans for just such modernizing and reorganizing. The entire defense and military set-up in the United States would be affected. It may become a necessity forced upon us to maintain our military superiority. Yes, the army of the future consisting of one million officer-engineers may be vital to a successful defence of North America, in the not very distant future.

There you have it! The trends are out in the open for all to see. The 'automation' of our production facilities, as well as our armed forces, is well under way, and is serving notice on the North American Continent that the paramount problem of our time is insinuating itself into our everyday lives and will soon scream into our ears for immediate attention. So far we have ignored it, but as the tumult and the shouting fill the air, we must finally succumb to the inevitable 'automation' in the consumption of the abundant supplies which abound in this our automatic, atomic age. We must accept the horn of plenty which technology is presenting us, difficult though it be to surrender our scarcity concepts. Take comfort and do not fear this thing too greatly for we are an adaptable animal and have been able to conform to new environments before now.

We are all in this together and will have to meet the common problem as a united people, not a people torn assunder with witch hunts, accusations and counter accusations, suspecting all and sundry; anti-American against the opposite anti-American. The time has come for American to become American again and wrest the spotlight from the would-be demagogues, who can only succeed in blinding us to the need for solving the greater problem. That this self-annihilating warfare has been joined in the open can be seen in the several articles on the subject appearing in the same issue of U.S. News & World Report. We hope the struggle will be dissolved in time to meet the onrushing tide of Automation, Technological Unemployment and Abundance.

—Ron Morgan

Farewell to Europe

'Stay in Germany where you can say and write what you please,' said the youngest and brashest of the students as we sat in the little house near the prison that night, and nobody thought to laugh at the irony of history.
—Kay Boyle

BY 1949 a change had come into the faces of Europeans when they spoke of America, and my forbears seemed to feel uneasy in their revolutionary roles. In 1951 scattered editorials appeared in the foreign press, and Europeans asked curiously, incredulously, about 'the democratic tension' in America. Which of the basic freedoms was the voice of one man condemning, they asked, and which did he honor, and — far graver — which of the freedoms could survive his daily abuse? In late 1952 and early 1953 the press of England, Germany, France—although never one organ of the Communist Party—spoke bitterly of this man, an American, whose name was not Eisenhower, or Dulles, but something quite different in essence from either of these.

One German newspaper editor, a close friend for several years, and a tough, seasoned fighter for democracy, struck the table with his fist and said: 'If there is another side in America as articulate as this one man's, then get more and more evidence of it to us over here. I don't want to fill my paper with the reports of his accusations, with accounts of the suicides of honest men. I want to give the German people another America, an America as dynamic and eloquent as his. If his voice

Something's Getting Warm, Uncle

Poinien in The Detroit News

Reprinted from THE NATION.

doesn't speak for your countrymen, then let us hear other voices ringing out. Only Einstein, once a German like me, spoke loudly enough for us to catch the echo over here.'

'Don't go back to America now,' a Paris concierge I have known for fifteen years said to me in the spring. 'It isn't your country any more'; and because of the silence that fell suddenly around us, I believed for a moment that my ancestors had died. As she washed the tiles of the entrance hall or peeled the potatoes for the soup at night, the concierge spoke of one man only, and it was not Pinay or Laniel or even Mendes-France. It was an American, and his name was McCartair, and if he didn't like the look of your face, he'd subpoena you right in off the street, she told me. 'Stay away from America the way the French who could manage it stayed away when fascism was in the saddle here. It doesn't last, fascism. It's a corpse that the ambitious try to pump the blood of life in every now and then. The French people will see it doesn't get any more transfusions in a hurry here,' she said. When I spoke of other Americans to her, she shook her head, and she poured us each a glass of wine in sympathy. 'There is only Monsieur McCartair,' she said. 'There is no other side.'

For over four years I taught in a women's prison in Germany, and the director of the prison stands, a clear, pure figure, as strong as stone, against the grimness of that place. She is calm and proud, wise and humble, and gracious as few Germans have ever sought to be, One of the last evenings in Europe was spent in her small house near the prison, spent in talk, as had happened so many times before, with a group of students from the local university. She said to me then: 'Write to us about the other America. It must be there.'

And one bold, young student of political economy said that this 'other America' on whom the common people of Europe had counted, and counted still, had no press even in America to speak for it. 'The same kind of censorship through indecision is taking place in America now as once took place in Germany,' the student said. 'People can't risk losing their jobs by buying a paper that defends the freedom of the

individual. So, one after another, these papers die. That's what happened in Germany twenty years ago; so the other side was never heard. That's what's happening in America today.'

'Tell them when you get back,' said the director of the prison, 'that we had our demagogue too, and for a long time we laughed about him. We said that for the German people he was an impossibility. Tell them that when a dictator came to power in Italy, we said—out of our national contempt for the Italian moral fiber—that we, a democratic people, with the history of democratic trade unions like a strong backbone to support our economic life, could never be emotionally swayed as they had been. But little by little, while we talked of our traditions, the demagogue talked louder and our civil liberties narrowed, narrowed, narrowed, until one day they were no longer there.'

'Stay in Germany where you can say and write what you please,' said the youngest and brashest of the students as we sat in the little house near the prison that night, and nobody thought to laugh at the irony of history.

'Don't go back to America until the tide has changed,' were the words written in a letter from England that I carried in my bag. 'Don't go back to a state of mind that can justify a military treaty with Franco Spain by that impoverished word "expediency." And a message from a Spaniard in exile in the south of France lay beside the Englishwoman's letter, and it said: 'Wait to return until the campaign promises have been kept by your President concerning the Taft-Hartley law and the McCarran Act. The air in America will then be easier to breathe.' And the voice of a young Frenchman came across the frontier, saying to me: 'There are periods in the history of every country when there is no course left to the intelligent citizen but to stay away.'

And then, as if they had been roused from sleep, my forbears stood up from their chairs. The women among them waited, their eyes fixed gravely on me, for me to speak, but the men walked back and forth in agitation, and the little house near the prison trembled with the vehemence of my Irish grandfather's ire.

'No, this is the time to return,'

I said to the German students seated in the room, and to the Frenchman, and the Spaniard, and the Englishwoman, who were not there. 'This is one of the times in history when one must go back and speak out with those of the other America clearly and loudly enough so that even Europe will hear.' **—Kay Boyle**

★ PHILADELPHIA.—U.S. Supreme Court Justice William O. Douglas said here that the United States will never win the peace if it continues to sacrifice liberty 'for a miserable political advantage with a campaign of hate and suspicion.'

Douglas made these points in an address before the Friends Quaker Committee on National Legislation :

1. 'We are condemning men and women on the basis of hearsay, innuendo and guilt by association.'
2. 'Reports whose sources are kept secret and never disclosed are used publicly to condemn and destroy people.'
3. 'The privacy of the home is increasingly invaded by wiretappers whose footsteps are never heard.'
4. 'A Communist, one with Communist affiliations, one with leftist tendencies, a Socialist, a Liberal, or just a plain Yankee who does not like this business of the witch hunt and who shouts his protest—these are all put in the same classification.'
5. 'America's prestige in foreign countries has declined and this can be traced to the disrespect we have shown the rights of man here at home.'

—Associated Press

★ NEW YORK.—The governing body of the Presbyterian Church in the U.S.A. said recently that 'a subtle but potent assault upon basic human rights is now in progress' in the United States.

Moreover, the church charged, 'loyalty to truth' is being sacrificed for propaganda purposes.

In what was described as an extraordinary action, the denomination's general council sent to its 8,000 pastors and 2,500,000 members a letter on contemporary affairs, asserting: 'Dangerous developments are taking place in our national life.'

The letter charged that a 'cynical attitude' in official circles was discouraging attempts to settle world tensions by negotiation, and that congressional inquiries have tended to 'become inquisitions.'

'These inquisitions, which find their historic pattern in mediaeval Spain and in tribunals of modern totalitarian states, begin to constitute a threat to freedom of thought in this country,' the letter said. *—Associated Press*

★ WASHINGTON.—The United States Army will cancel contracts worth $500,000,000 by June 30, a high defence official disclosed recently.

Harold L. Pearson, deputy under secretary of the army, told reporters that 'the nation's biggest buyer has been going out of the buying market' for six months in an effort to achieve both economy and efficiency in money matters.—*Associated Press*

★ OTTAWA.—Unemployment insurance payments rose to $10,172,035 last November, compared with $7,603,667 in October and $6,435,444 in November, 1952.

—Canadian Press

Responsible Citizenship

While we cannot speak for you personally, ample documentation indicates that million of North Americans are muffing their responsibilities as citizens. They are failing to pay sufficient attention to the way in which their affairs are being managed.

ARE you a responsible citizen? Do you take a decisive, active role in managing your nation's affairs?

In all likelihood your response to the above questions will be an immediate and unqualified 'Yes . . . of course I am and I do!' Having answered thus affirmatively, you will proceed to support your stand with abundant testimony on how you have consistently polled at all political elections within your district and voted for the various candidates you considered best for the different governmental capacities.

What did you do after that?

While we cannot speak for you personally, ample documentation indicates that millions of North Americans are muffing their responsibilities as citizens. They are failing to pay sufficient attention to the manner in which their Continent's affairs are being managed. They vote a body of legislators to office, then for the most part wash their hands of governmental affairs until the next election — when the same rigmarole starts all over again. Meanwhile the elected are left pretty well to their own resources to make or break laws with little or no regard to their constituent's wishes. More often they represent millions of dollars than millions of people.

Yet they are no more to blame for the frequently ensuing chaos than their electors. Can they be blamed for coveting a cushy government job enhanced by the juicy plum of a fat salary? No. If oratory and political propaganda can achieve for them their objectives, they will use these and other media to the ultimate capacity . . . even though their knowledge of the respective jobs is practically nil.

The dereliction of the public in voting functional incompetents to responsible positions constitutes an act of treason! In placing these people in positions of importance

to the physical operation of the Continent, the citizenry is dangerously negligent in the discharge of its social responsibilities.

North Americans are endowing with administrative authority persons who are more often noted for their oratorical prowess than their ability to do the jobs given to them . . . persons with little or no understanding of the intricacies of functional control of so complex a physical mechanism as exists on this Continent. Very often the voters are far more able to do the specific jobs than those elected to them.

Once again we ask: Are you a responsible citizen?

There was a time in our history when events moved so slowly that it did not particularly matter if the wrong person were put in a certain job . . . political or otherwise. He could probably bungle along for some time without causing serious damage to the existing social fabric.

Yesterday the illiterate peasant could drive his oxcart along a rocky road without even watching where he was going. The oxen probably knew the way. What if a wheel did happen to hit an extra large rock and come loose? It couldn't do much damage because they were travelling only two or three miles per hour anyway. The peasant could likely fix the trouble after a little tinkering around, then go back to the sleep from which he had been rudely but harmlessly awakened.

The pilot of today's supersonic jet airplane faces a far different situation. In the first place, he himself is a highly trained technician. Flying faster than the speed of sound he must be wide awake and constantly alert to meet all exigencies likely to arise. An error in judgment or a mechanical defect in his craft can rapidly result in his being splattered all over the landscape . . . and the chances of his personal survival are remote.

The oxcart and the jet plane are quite representative of their respective eras. Our modern social fabric differs vastly from that of a century ago, with the difference being principally one of velocity. There has been a fabulous acceleration in the rate of doing work in this time . . . especially since the beginning of the 20th Century.

From the slow tempo of the

strictly handtool age our methods of production have speeded up to the point where they are augur-ing the complete abolition of man-power in the near future as a source of energy in the installa-tion of certain already blueprint-ed automatic factories. Even much of the supervisory work of these factories will be done mechani-cally by recently developed elec-tronic devices, more familiarly known as the 'electric eye'. Such personnel as will be on the job will be men trained to do precise work as scientists, technicians and engineers. Since they will not take actual part in the production processes, their main function will be to keep the machinery in good running order.

The services of these technically trained people are indispensable to North Americans today. Whe-ther they be in production, trans-portation, communications, or scientific research laboratories, it is they who must administer the affairs of this Continent in the future. Politicians have no place in the scheme whatsoever.

Unfortunately, not all function-als are yet fully aware of their responsibilities as citizens. In-deed, away from their jobs they are as apathetic as everyone else concerning matters of social ad-ministration. On an election day, for instance, the technical direc-tor of a hydroelectric power pro-ject supplying electricity to a vast area and a multitude of activities will likely take time off from his very functional post to vote into office a politician who eventually becomes electric power adminis-trator even though he hasn't a glimmering of electrical knowl-edge. Such a situation would be comical were it not so tragic in its social consequences.

Occurrences of this nature are too frequent to rate as coinci-dence.

The high-powered diesel train of North American society is headed pell-mell down the tortu-ous railroad to destruction with a madman at the controls in the cab, while a competent engineer reclines comfortably and uncon-cernedly reading a book in one of the plush coaches behind. He had better become aware soon of the danger facing himself and the other passengers while there is yet time for him to prevent a de-railment with its consequent de-vestating crash into the abyss of chaos below.

Technocracy Inc. urges all North Americans, and especially the functionally competent technicians and scientists who have made our Continent what it is, to reappraise their present position both from the aspect of the unparalleled technologically-wrought capacity for abundance and the bottle-neck properties of the politico-economic Price System controls superimposed thereon. Compare them. Hardly more than a cursory examination is necessary to show that the two aspects of our social operation are so far out of line with each other as to be irreconcilable. What can be done about it ?

It would be pointless for the technicians, scientists and engineers to replace the present incumbents of political office since politics itself is but an archaic fragment of the outmoded Price System. Putting them in charge of the present political system, whatever its hue, would be a waste of their talents just as it would be to put a jet pilot on the seat of the old oxcart. The two simply don't go together.

To claim ignorance of a solution to the problem can hardly be excused. For some years now Technocracy Inc. has been holding public lectures, conducting study classes and selling literature (unsubsidized by advertising) all to the purpose of acquainting the people of North America with its answer to which no one has yet posed a factual refutation. Specifically designed to the requirements of a high-energy civilization after years of preliminary research, Technocracy's program would place the most functionally responsible and capable personnel right where they belong—at the top of the control mechanism.

If you have not already done so, we suggest that you hasten to your nearest Section of Technocracy Inc. and acquire all the available information on this extremely vital subject. Study the program along with other citizens and participate with them in the various functions common to any Technocracy Section. In so doing you will acquire a first-hand understanding of the vertical alignment method of promotion which automatically places the most capable personnel in the most responsible positions.

You will learn a new meaning of responsible citizenship.

—Rupert N. Urquhart

A Mature Civilization

Our civilization in North America has reached its maturity and it is time we reaped the harvest which is waiting for us. The harvest will be a happy, healthy life for each and every citizen as he enjoys the abundance we have learned to produce.

PHYSICAL growth of any kind progresses from the earliest beginning of the given organism, through one stage or phase of life after another to maturity. Some types of living organisms follow an even pattern, with few if any variations or deviations from the given path. Others are erratic in their life cycle, they will progress rapidly for a time and then slow up or come to a complete stop, only to suddenly spurt ahead and reach maturity unexpectedly. Sometimes the growth and development is upset entirely by environmental factors and the species never reaches maturity, or does so in a stunted and unnatural manner. To make the picture more clear and understandable we will take a few examples of various species of plants and factors which can and frequently do affect their life and growth.

An example of a life cycle which goes through various phases of course is the caterpillar, which is first an egg, then a larva which grows into the well known caterpillar. There its life cycle is interrupted while it lies in the pupa stage, from which it emerges in an entirely different form, for it has been transformed from the lowly, destructive and unwanted caterpillar into a beautiful butterfly.

A tree, on the other hand, grows slowly without any marked change in state. It does however grow in spurts, with a rapid increase in its early life, slowing down as it develops, and answering to adverse or favorable circumstances of its environment. It will grow rapidly in a wet year and almost cease to grow during a drought. It may continue on for years to final maturity, it may be struck by lightning and be entirely destroyed, or be attacked by a virus which causes it to become a stunted, grotesque and useless bit of vegetation.

In the cereal crops, wheat, bar-

ley, rye and oats, for instance, we find a sensitive response to environmental factors. Type of soil, amount of moisture, weather conditions and even the depth below the surface to which the seed is planted play important parts in their life. Under ideal conditions they each will reach maturity in a certain number of days with little variation from year to year. A change in conditions of climate, even from one area of the country to another, will alter the pattern however, and cause them to take more or fewer days from seeding to harvest. Then again they are sometimes beset by a growth which through some unusual process causes the kernels so affected to grow, not into kernels of oats, rye, wheat or barley, but into ergot or smut, which is not only useless, but very harmful. In that case, although reaching maturity it is not in the form intended, they do not reach the goal for which they started and become instead of a boon to Man, one of his hindrances and annoyances.

We come now to that species which has attained the most spectacular growth of any, the human species, 'Man'. He has progressed not only physically but mentally and culturally. He has not been content to build his body, to improve his mental processes and to make the most of his environment. He has built a physical culture and has even altered his environment when he found it could be to his advantage.

He started out on an even basis with all the other animal species of the environment, he had no more than they, and because of his puny physique much less than many. He was a discontented animal however, and was never satisfied with what the environment offered. As a consequence he forged ahead of his fellow creatures and slowly, with many setbacks and periods of stagnation, arrived in a civilized state. By a series of circumstances which are too detailed and lengthy to go into here, we, the human species, find ourselves in the 20th century with all its improved environment and different set of conditions to any known by previous civilizations or peoples that have existed on this planet.

Our progress too was exceedingly slow at first, and in fact from the dawn of history until the year 1830 A.D. our growth

had been so gradual that one, or even two generations experienced so slight a change in environment that they lived their lives and died knowing nothing new or radically different in the way of doing things. Of course, through the several thousands of years of recorded history, and the million or more years before that during which we know Man existed, there was progress, and in that great length of time it was eventually observable.

From the year 1830 onward our progression accelerated, and was began to forge ahead at a compound interest rate of growth. The change in rate was no sheer accident, nor was it caused by a change in Man's desire or ability. There is an observable cause, which, started years before, had by that time made itself felt in the physical processes of doing work. That factor was the introduction and improvement of engines which utilized fuel in larger quantities than the human engine had ever been capable of consuming. In other words, mechanical engines, first steam powered, then the internal combustion type, were converting fossil fuels into mechanical energy, and so doing work. That was the beginning of a new phase in Man's cultural growth, and because he was able to produce the physical necessities of life in greater volume his rate of progress accelerated.

Because of this new found source of power he was able to do work and accomplish tasks which the only known means of bygone days — human muscles — had been unable to do. When the North American Continent was settled those fortunate individuals who had made it their home found sources of energy in such supply that in the intervening years they have built the greatest technological civilization in the world. Business has boomed and with minor oscillations and one major slump has risen to heights undreamed of by the average citizen. Our business leaders, our economists and politicians tell us we will go on to new heights, that we have only begun to produce, and they foresee, or pretend to foresee, a future in which our production expands many fold, and businesses increase their operations constantly.

In spite of these predictions by men who are portrayed as competent, informed leaders, and even

though we see the production still on the upswing, Technocracy Inc. is warning of a major depression. The Technocrats say our economy is in for trouble, and in fact the whole Price System method of operation is in danger of disruption or complete stagnation. Someone either doesn't know what he is talking about, or is deliberately fooling the public, hiding from them facts of the matter for some reason or other. The businessmen, the economists and politicians are in the public eye. They are known, and people are wont to listen to them. Nonetheless, Technocracy will continue to come out with the same information, will continue the same uncompromising statements, and do all it can to bring a message to the citizens of this Continent.

We know we are correct, for upon analysis we find it is a physical thing with which we deal, and it therefore follows a measurable and unidirectional path. By the use of steadily improving technology, powered by the fossil fuels below the surface, and the flowing water of the many mountain streams, we have fashioned the mineral resources of North America into the greatest technological operation on earth. We have given to the people who live here a standard of living higher than any peoples of the world. We have trained men and women who can and constantly do operate the industrial equipment so the supply of necessities is maintained. We have a mighty Continent, and we have capable people here, and yet, we have troubles galore! Things don't go as smoothly as they should, we have citizens in privation and want, our health standards and facilities are inadequate, the educational institutions constantly behind the demand upon their services. The traffic problem is rapidly worsening and becoming a nightmare to motorists and pedestrians alike. In the face of that, the contrast between what we could have and what we do actually experience, it is small wonder anyone who has analysed the situation says there is something amiss with the social control.

Technocracy has analysed the problem and come up with answers which do not parallel those of the Price System apologists—the businessman, the politician, the ecclesiastic and the would-be

chiseler who is **hoping** to somehow come out on top. Whereas they extoll the virtues and wonders of the present system while predicting that it will constantly grow and build bigger and better as the years roll on ad-infinitum, never apparently reaching a peak, the Technocrats explain that this being a physical growth must of necessity follow the physical laws.

Now, according to p h y s i c a l laws, any growth starts slowly, accelerates faster and faster until it begins to slow down and finally to level off. Then it may decline slightly to maintain a constant level, such as a population growth where the births balance the deaths. It may decline until it finally reaches z e r o, for the growth may die, as a tree dies. It never however continues to grow indefinitely. It cannot, for it finally reaches an apex, the culmination or maturity. Man himself, being a physical organism follows pattern number two, and his final state is that from w h e n c e he sprung.

We cannot then expect our industrial growth to continue upward indefinitely. E v e n though our ability to buy goods produced is somehow maintained, the physical limit of consumption is finally reached. Today on this Continent that limit is being approached in some lines—automobiles, for example. If all the cars in the United States were parked bumper to bumper they would c i r c l e the globe three times. A nice parking problem! There is today nearly one car for every qualified driver. And the automobile industry is still building them, and planning on continuing. They have to if they wish to stay in business. We not only have one radio for every home, we have several, and on the farms they have them in the barns.

In the farm line we have mountains of wheat, storehouses full of butter, eggs and m e a t. Yet it looks as though there will be a bumper crop this year, and the government is charged with the responsibility of taking the produce off the farmer's hands at a set price. T h a t the government will have to go into the wheat business in a big way again this year is attested by the fact that the four major wheat producing countries of the world, Canada, U.S., Australia and the Argentine t o g e t h e r have just **twice** the amount of wheat in storage that

they had this time last year. You see, wheat growing is an industry which lends itself particularly well to the technological method. If that is the condition now, given favorable weather conditions, what will it be a year hence?

No, we cannot continue as we have been doing, and yet the political, business leadership knows of no other way. The Price System is predicated upon the maintenance of profit, and in order to operate at a profit any and all industry and production must increase at a rate of seven percent per annum. In some instances it is interesting to ponder whether that method will succeed first in completely swamping us in goods, or whether the natural resources out of which the consumer goods are being made will give out first. We are turning our irreplaceable natural resources into goods for which there are no consumers, in order to keep alive a system that does no one any particular good. Yes, no one, for even those who are successful today, and have a fortune at their disposal, are victims of a system that cannot provide a healthy, happy atmosphere for any of our citizens. They too live among the stench and filth of sewers which open into our oceans adjacent to swimming beaches. Even they must buck the nightmare of traffic, and often become victims of a tragic accident caused by highpowered cars on inadequate roads. They pay in broken homes for a society which never teaches, and seldom even permits normal relationships and associations. Their wealth itself becomes a sword that divides by mistrust and worry, those who should live in harmony and happiness.

Amidst all the confusion and worry today, of businessmen haunted by the fear of financial ruin, of farmers standing amongst their unsalable produce, and of families forced to exist on a pittance, the organization Technocracy Inc. stands out as the only group which knows what to do about the whole mess. Technocracy points out that what we really need and actually want is security and leisure to enjoy the relatively short span of years at our disposal. Our physical environment on this Continent has finally made that possible, but we are so confused we think we would rather fight and haggle in business operations for a puny

profit in dollars, which can at the best supply a scarcity.

Our civilization in North America has reached its maturity and it is time we reaped the harvest which is waiting for us. The harvest will be a happy, healthy life for each and every citizen as he enjoys the things we have learned to produce and maintain. The healthful food in plentiful supply, the knowledge of how to maintain our health, how to combat disease. We have the mechanical knowledge to build proper sewage disposal plants so our sources of water are not fouled to cause sickness among us. We know how to maintain fertile soil so the crops we produce will contain the necessary vitamins and minerals, and we know how to cook those foods so nearly every drop of nutrient is saved.

All these things and many more could be the harvest we reap, and by intelligent methods it can be a perpetual harvest, as in a forest management program. For our natural resources would be husbanded and utilized in a manner to ensure their supply for many generations to come. A harvest day after day and year after year, without endangering the health of the parent plant—the Continent of North America.

We can do this only by using a system other than the Price System now in use. A system which would be dependent on operation and distribution rather than on uncontrolled production and salesmanship to anyone who has the price. In other words, Technocracy's plan for distributing an abundance to the citizens who live on this land area.

The alternative is the continuation of a system that knows only more production to the peril of all those things necessary for our future life, to waste that production in any way known, preferably through wars, so more can be produced for a profit. If that is kept up much longer we will be left with a denuded Continent and find ourselves once more fighting a scarcity, like the teeming millions in Asia. Think it over, North Americans, this Continent is our heritage and we and our children would like to be around for a long time yet!

—Ed Broderick

They Say . . .

'Cockeyed Lunacy'

Can't get over that story from Washington about the government's surplus of butter—131,000 tons of it at the last count and another thousand tons piling up every day. And nobody knows what to do about it!

Which makes you wonder anew at the cockeyed lunacy of the so-called free enterprise system and the fallacy that prices 'find their own level.'

Truth is that the price level on all products which may be held in storage is rigidly maintained until the last collapse of purchasing power. If it were otherwise, if prices really fluctuated by the law of supply and demand, the butter would be at a competitive price with margarine.

The real story is that butter, like South African diamonds, is hoarded to maintain a false price.

—Columnist Jack Scott

Depression Ahead

People are optimistic today just as they were in '29. Actually I think we're in a worse position.

People are 'buying crazy' but they're buying on credit. The consumer has extended himself further than ever before. As soon as things tighten up they won't be able to meet payments and that stuff will come on the market.

Once it starts, the thing is going to pinwheel. People put a lot of faith in government spending to bail us out but that can only be a drop in the bucket.

Actually you have a combination of dangerous circumstances —reduction in arms spending and, more important, the normal tail-end of a boom cycle.

—Jim Marr, retired economist of a leading Wall Street firm and former financial editor of the New York Journal American. (Mr. Marr is on record as predicting the 1929 debacle.)

An Automatic World

According to a scientific friend of mine, one day we will have an automatic lawnmower which will clip away while we sit on the front stoop and shout instructions about how to miss the trees, hedges and petunias.

John E. Haines isn't kidding.

He is a vice-president of Minneapolis Honeywell, and mostly is interested in plastics and electronics.

'There is an automatic lawnmower in the works,' he said. 'It will be smart enough to skip the flowers on the lawn and cut down the grass instead. All by electronics.

'We are entering an automatic world where electronics will do things for us we cannot now imagine,' he said. 'The engineer is coming into his own.

'He is going to be the man of the hour. He is going to improve our standard of living, our health and our comfort.'

—H. W. Nichols, BUP

Machines and Men

When automation becomes general and its benefits are widely shared, Lewis Mumford has said: 'Men will be back once more in an Eden-like state. The ritual of leisure will replace the ritual of work. Work itself will become a kind of game.'

Those who agree with him feel that the new industrial age can, indeed, be a glorious one. Men will produce more and work shorter hours to do it. All menial and routine tasks will be done by machines, leaving men free to live up to their highest potentialities as thinkers and creators. Combined with other developments now on the technological horizon —unlimited energy from the sun, unlimited supplies of fresh water from the sea, unlimited raw materials produced synthetically—they can make human want obsolete. **—Platform, October, 1953**

'Mere Makeshifts'

Neither of the ideologies engaged in the struggle for power on this earth today offers humankind anything approaching a really good way of life. Both have got plenty of holes in them. Both are mere makeshifts.

Marxism and capitalism, as they are popularly understood, are a hundred years out of date. They are not geared to the atomic age.

Our political systems are a miserable failure when measured up to the scientific age we have now entered.

We'd better do something about it. **—Vancouver Daily Province**

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the membe. to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska. Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Whatever the future of Technocracy, one must fairly say that it is the only program of social and economic reconstruction which is in complete intellectual and technical accord with the age in which we live.

—Encyclopedia Americana

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TECHNOCRACY
PROVIDES THE DESIGN
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TECHNOCRACY DIGEST

MAY '54

Implications of the Hydrogen Bomb

Adaptation or Extinction

Automated Factories Are Here!

Scrap the Iron Curtain

Where Are the Machine-Created Jobs?

First Atomic Battery

Blessing or Curse?

'Explorations in Science'

No. 152

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

MAY, 1954 **No. 152**

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Implications of the Hydrogen Bomb

The race is on to determine which side can first achieve the formula for blowing up the whole earth. We may well ask, What social objective is worth such a contemplated orgy of destruction? The answer is: None.

ON NOVEMBER 2, 1952, the United States exploded a 'thermonuclear device' in the Pacific Ocean; and this inaugurated a new age in the era of super-explosives. Then, in August, 1953, the Russians exploded a comparable test 'device' in Siberia. There is some evidence that the Russian 'device' was more advanced from the research standpoint than the American 'device' and much cheaper to produce. Since then, the United States has made a frantic effort to catch up with the Russians, if not get ahead of them. From reports of the recent 'tests' in the Pacific, it is evident that we have made some 'improvements' in the H-Bomb; however, we do not know what 'progress' the Russians may also have made in the meantime.

The recent explosions in the Pacific were timed, shall we say 'coincidentally,' with preparations for an international conference in Geneva—called to discuss peace and war in east Asia. No doubt, they were intended to serve, among other things, as a coercive argument in support of Freedom versus Slavery.

Thus, the race is on to determine which side can first achieve the formula for blowing up the whole earth, or at least, for turning half its surface into glass—all of this in a childish effort to

Fitzpatrick—St. Louis *Post-Dispatch*

"GLIMPSE AT DOOMSDAY"

gain a 'point of strength' from which to launch threats and ultimatums.

What to do about the 'thermonuclear devices,' now that they have been produced, is a question that has been given no satisfactory answer.

It is admitted that, if Hydrogen Bombs are used as war weapons, the destruction would be fantastic, with the civilians furnishing most of the casualties, and there is a grave danger that most if not all centers of civilization would be destroyed. We may well ask, What social objective is worth such an orgy of destruction? The answer, of course, is: None. The motives of those who clamor for the immediate use of Hydrogen weapons lie deeper than the probability of any recognizable social gain to be derived therefrom. The deeper motives are based on phobias and hates that deaden all reason. But there is an efflorescence of motivation which is the same as in all wars—hope for an easy and quick means of getting at the loot.

In the United States, at least, the motivation of greed plays an important part in the development of the Hydrogen Bomb. The cost of production is fantastic in terms of energy and rare metals consumed. This means that someone is making huge profits on the stock market and commodity exchange. It enables the government to spend appropriations of billions of dollars under an obscure accounting system. Raw materials by the trainloads are consumed and power by the billions of kilowatts are expended and the produce does not have to be sold on the consumer market. However, in so far as the actual cost is concerned, the production of an equivalent destructive potential in the form of high explosive and fire bombs and rockets would be cheaper; and it would have certain Price System advantages over nuclear weapons. But the dramatic effect and the diplomatic prestige would not be so impressive.

Let us take a closer look at some of the rationalization and diplomatic maneuvering that goes on behind the scenes of the Hydrogen Bomb development.

We can dismiss at the outset, as invalid, all propaganda about the world struggle being one between Freedom and Slavery. That is the same old line that has been pulled

for dozens of centuries, often billed under the title of Good versus Evil. In practical language it merely means Our Side against the Other Side in a struggle for area, wealth, and power. At this time, Our Side consists of the Holy Alliance of American Politics, American Big Business, and the Vatican, with various and sundry satellites, mercenaries, and fellow travellers. The ultimate objective of Our Side is world domination under the banners of Roman Catholic fascism and American Corporate enterprise. The Other Side consists of the anti-fascist bloc of East European and Asian nations which come under the political and economic suzerainity of the U.S.S.R.

The Other Side has certain distinct advantages over Our Side in this competition for power: It is riding on a wave of revolutionary ferment in support of a new order of society, while Our Side has no more social inspiration than a surly, die-hard reactionism, dedicated to a philosophy of scarcity, human toil, and superstition. The populations of the Other Side are probably more intelligent as a whole, not having had their superior intelligence weeded out to the extent that it has been done among the populations of Our Side—by Inquisitional liquidations and retrogressive breeding. The Other Side is stimulated by the exhaltation of a rapid technological expansion which is enabling it to 'catch up' and, perhaps, soon surpass Our Side, while Our Side is suffering embarrassing apprehension over the expansion it has already achieved. The natural resources of the Other Side have not been exploited and despoiled to the degree that those of Our Side have. The Other Side has its efforts regimented and streamlined for a unified objective and not dispersed in all directions by anarchic private enterprise. It can reach a social decision by decree rather than by involved compromisation.

In our pointing out the greater efficiency and potential competitive effectiveness of the Other Side, we intend to imply no approval or respect for the social objectives of or the social means employed by the Other Side. And, of course, we have nothing but contempt for the social objectives of and the social means employed by Our Side. We recognize that the power struggle between Rome

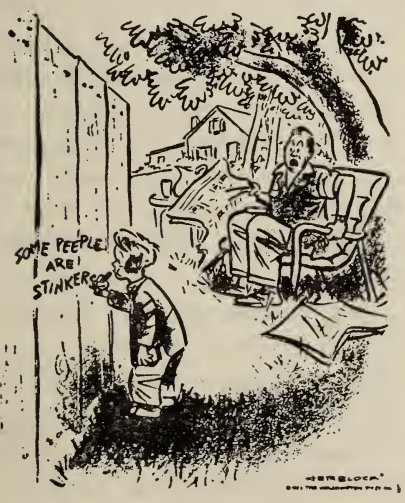
and Moscow is a war between two alien social philosophies; and we protest any support given either side by the citizens and the administrators of this Continent. We do not hold with the McCarthyites, the Spellmanites, and the Dullesites that this Continent should set out to destroy half the world in order to save the Vatican and the scarcity values of the Price System and, at the same time, run a grave risk of having our half of the world destroyed too.

There are a number of liberal spokesmen in America who can take a critical view of the internal affairs of their nation and the antics of its Leaders—in spite of the fascist pressures brought to bear against them. Yet, when they take a view of the Cold War, they become hysterical in their denunciation of the Other Side, as though they are obsessed with a phobia of coming under the administration of the Other Side, which they feel would be a 'fate worse than death.' We need mention only Elmer Davis, off-and-on the radio commentator, to illustrate this point; but he is only one of many. Still, a third of the world's people are living under the administration of the Other Side and they do not appear to mind it too much; rather, they seem willing to fight ferociously to maintain that status.

We might suggest that coming under the administration of the Other Side could not be a 'fate worse than death' any more than coming under the domination of any one of a number of other political cults, among them: Roman Catholic fascism, Mohammedan fascism, Hebraic fascism, Shinto fascism, or any of the traditional forms of colonialism. Whatever can be said against the Other Side, it cannot be accused of sitting tight on the status quo and opposing technological development and scientific progress. (Even though the Lysenko 'biologists' are off on a dead-end tangent, there is no reason to assume that other branches of science are suffering a similar set-back in the Soviet Union.) There is no reason to suppose that the fate of the individual citizen behind the Iron Curtain is any more deplorable than, for instance, that of a negro in the United States or a Protestant in Argentina.

The Other Side has its witch hunts and spy trials the same as

Our Side; and it has counterparts of Alger Hiss, the Rosenbergs, and other victims of the fascist purge on Our Side. But the record of the Other Side, at its worst, has nothing to compare in either extent or sadistic cruelty with the recent fascist purges of Germany and Italy. And, if we should take a longer view, it is extremely doubtful that any regime in the world's history has achieved the magnitude in slaughter or the senseless torture and suffering that blackens the record of Roman Catholicism; and, when we say this, we are not unmindful of the Mongols and other butchering hordes that came into Europe from Asia. Thus, Our Side has no claim for being a shining example of an ideal Way of Life for the world to emulate. The word 'Crusade,' which Our Side uses so freely as a name for its quest for power, has become synonymous historically with destructive spoilation of whole territories and the genocidal slaughter of 'infidel' populations. The Eisenhower Crusade has the same connotations and potentialities but carries with it far more fearful means of destruction than those of any previous Crusade.



"Stop That! McCarthy Will Demand Space for a Reply"

One could easily gather from President Eisenhower's speeches that he considers American businessmen to be 'God's Chosen People,' blessed with a Divine Destiny to dominate the world. It appears to be the same Master Race paranoia that has consumed many Leaders down through the ages of human history. Such paranoias are always characterized by a Crusading zeal to destroy the Evil Ones.

Once you define someone or some group to be the Evil Ones—whether they be single individuals, a specific group, a race, or

the population of a geographical area—there is no torture that is too cruel and no violence that is too great when applied to that Enemy. The Evil Ones are incapable of suffering enough pain to satisfy your hate. All feelings of mercy, justice, or sympathy vanish. The American people displayed these emotions of debased human-ness against the Japanese and Germans during World War II; and, now, those emotions are transferable to the Chinese and Russians. With only a slight urging, they could be applied to the Asiatic Indians and the Indo-Chinese. Once we achieve such a degree of emotional hate, there is no weapon that is too cruel or too destructive to be used against the Enemy. Napalm, high explosives, even atomic bombs are not equal to our hate. We shall scream for the Hydrogen Bomb and yearn for something even more terrible. While in that emotional state, it is not beyond our capabilities to demand the destruction of the whole earth in preference to accepting defeat or stalemate.

The close of World War II displayed an almost friendly relationship between the people of the United States and those of the U.S.S.R. This was so in spite of certain very suspicious performances by Russia's Western allies during the war and some outspoken anti-Russian utterances by certain high spokesmen of the West. But the fascist Crusade of the Vatican under Hitler had gone down to defeat on the plains of Russia and the Vatican was provoked at the Russians. So, in a short time, American politics and American big business were brought into line and a state of Cold War was declared against the Soviet government. This ended any easy approach to an amicable modus vivendi for the world.

A jesuitical vocabulary of propaganda terms came into general use in the West, particularly in the United States. Following are some of the terms commonly used and their definitions as near as we have been able to decipher them.

Free People—Roman Catholics and their fellow travelers.

Slave People—Those who do not accept direction from Rome.

Communist—Anyone who is not a Roman Catholic or an outspoken sympathizer.

Aggressor — Any nation or

people who refuse to submit to the Holy Alliance.

Peace — A condition attainable only through the military conquest of the world by the Holy Alliance.

Defensive War—Any war, aggressive or otherwise, aimed at the opponents of a Roman Catholic dominated world.

Democracy—Any regime on Our Side, no matter how tyrannical and dictatorial. Only when the above definitions are applied do the propaganda terms of the West have any rational meaning.

The most vicious wars of history have been those waged against the dissenter or 'heretic.' America's first war of this kind was the Civil War or, more properly called, the War Between the States. Neither World War I nor II, so far as the United States was concerned, were fought with that kind of ferocity, with the exception of the bombings of Czechoslovakia and East Germany just ahead of the Russian occupation. The Korean War took on more of the color of a Crusade, since the Enemy was described as a heretic—being a 'dissenter' from the approved political, business, and ecclesiastical patterns of the West, although not as much so as Our Side pretended.

Under the goading of the Holy Alliance, many people of Our Side view the 'Reds' as heretics of the sort. These dupes of the Holy Alliance are ready, psychologically, to fight the cruelest and most vicious kind of war against those heretics. The more rabid of them are chafing under a frenzy similar to that of a lynch mob which is preparing to go out on a rampage to capture and kill, to mutilate and burn the remains of its intended victim. More than one American during recent years has taken a walk out of a window high up (or something equivalent) because the frustration of marking time was more than he could endure. This suicidal form of frustrated frenzy is what we have termed 'forrestalitis.' When it is symptomized merely by a verbal frothing at the mouth, we designate it 'winchellitis.'

The sour-faced Mr. Dulles is busy handling the dirty work behind the scenes for the Holy Alliance, while his nominal superior does the pious act out front and a certain rowdy from Wisconsin creates diversionary disturbances on the periphery. The setup is so

old that it is stale, but it still works. The 'rubes' never seem to know what is going on until they wake up with a knot on the head and their pockets empty. When the game gets rough, some of them don't wake up at all. If Mr. Dulles is 'successful' in his present 'mission,' there is a fair probability that a few hundred million (at least) will never walk upright again.

In the old days, when the weapons of attack and retaliation were wielded by human hands and muscles, the efficiency was so low that there were bound to be some survivors after the orgy of destruction and slaughter had tired itself out. But, now that the major antagonists both have weapons of 'massive' retaliation,' there is a possibility that there will be no survivors, or even no earth as we have known it.

There is no evidence to indicate that organic life, such as exists on earth, occurs in any other part of the universe—in spite of the imaginations of fiction writers, Flying Saucer experts, and other visionaries to the contrary. If the earth were destroyed, there is a possibility that no life would remain anywhere in all the universe. So far, the only basis we have for believing that life exists elsewhere is that of analogical reasoning: Since life occurs on the earth, we reason that it could likewise occur on other planets of similar circumstances. But the existence of such earth-like planets must also be assumed by a similar process of analogical reasoning. We have no direct proof that there is another planet closely resembling the earth anywhere else in the universe—one that possesses the essential requirements for supporting organic life.

Being a part of the life of the

Progress of Man

Justus in The Minneapolis Star

earth and sharing with it the general desire to continue living, we shall not concede that there can be any merit in the destruction of the earth or of all life on the earth. We take the stand that the earth is worth saving for the life on it, and vice versa. Now that the time is near when total destruction of the earth is a matter of human capability, we resent the power of decision being acquired by those who are psychologically capable of choosing such destruction either on impulse or deliberately for any reason whatsoever. We take the view that the power of acting on such a decision must be guarded with the utmost vigilance from those who are capable of willing the destruction of the earth, or of even risking such a destruction. This is one hazard against which the h u m a n race must, henceforth, be forever on constant guard.

Who would be capable of deciding in favor of the earth's destruction if he had the power to make that decision ?

First, t h e r e is the paranoic, whose ego might get an ecstatic thrill out of taking the w h o l e earth into oblivion with him. Consequently, the secrets of the new super-power, or at least any opportunity to use it, must be carefully excluded from t h o s e who show paranoic tendencies in their psychological check-ups.

Second, those pious or fanatic individuals who consider life on this earth as merely a 'stepping stone' to life somewhere else must also be excluded from positions of decision; for, there is no telling what 'divine revelations' or inspirations they may 'receive'. The fate of the world might not be safe in the hands of such individuals.

Third, people who are advanced in years, or whose health is poor, or who suffer physical disabilities or deficiencies must also be excluded because of the possibility of t h e i r becoming despondent over approaching death or their physical handicaps and wanting to 'take' the whole world with them in a suicidal plunge.

Fourth, those who have manic-depressive symptoms or tendencies and those whose families have case histories of suicide must be excluded as a matter of general precaution

The knowledge of how and the means to destroy all life on the earth — whether by lethal gases,

atomic fission or fusion, bacteriological poisons, or other effective means—must be guarded by a trusteeship set up by the world's inhabitants. The gravity of the circumstances demands this, and nothing else has any probability of effectiveness. We shall attempt here to make some recommendations for the specific qualifications of such a trusteeship.

The trusteeship should be composed of a sizable personnel, with interdependent and interlocking functions. No one individual, no matter how 'reliable,' can be trusted with such power. It should be restricted to relatively young people, in good health. Psychologically, they should be lacking in strong egocentric tendencies and be emotionally well-balanced. And they should be free of 'other world' philosophies. In other words, the personnel should consist of persons who have every reason to want to live out their lives on this earth and to let others live. Further, we recommend that the personnel be selected from a variety of social backgrounds, geographical localities, and ethnic groups. Thus, it would not all come under the discipline of any one cult or philosophy.

Such a trusteeship cannot be set up in a world that is divided by strife and conflicting ambitions. It is more urgent now than ever before that an alliance be established between the United States and the Soviet Union to preserve the safety and tranquility of the world. Only an effective military and economic alliance between these two nations can guarantee peace in the world. Their continued opposition can only make the security of the world more tenuous and uncertain. This is the position which Technocracy has taken for many years, and its wisdom is becoming more obvious all the time.

There are certain war-lovers on Our Side, and probably on the Other Side too, who do not want to see the world at peace. Some are goaded by philosophical manias, but the majority of them probably are motivated by greed for greater yields from their investments in stocks of war industries. That the profits from these investments are stained with human blood and entrails appears never to bother the war-lovers. Unfortunately the war-

lovers have a great deal of say-so in our national affairs and in the formulations of our foreign policy.

In the spring of 1950, when the economy of the United States was sliding into a slump, a certain Mr. John Foster Dulles was very busy scurrying around Europe and the Far East; and, in a short time, we were in the Korean War and the economy improved. Now, in the spring of 1954, the economy of the United States is sliding into a slump again. The same Mr. Dulles is very busy scurrying around; and, as this is being written, there appears to be a high probability that the United States will enter a full-scale involvement in the Indo-Chinese War. From the way Mr. Dulles is working behind the scenes, it is apparent that he does not trust the pro-American bias of the United Nations sufficiently to place his scheme before it, at least not before achieving a fait accompli that is difficult to revoke.

Instead of doing everything possible to effect an alliance between the Big Two nations of the world, the Number One ambassador of ill-will of the Holy Alliance appears to be doing all he can to deepen the rift between the Other Side and Our Side and to make war more inevitable.

Technocrats contend that the scarcity values of the Price System are not worth one's crossing the street to save; and, most certainly, their perpetuation is not worth risking the destruction of the whole earth. Rather, we say, let us discard the Price System altogether and enter an Era of Abundance, Peace, and Freedom from Toil. In fact the people of North America have no final choice other than this: Abundance or Annihilation. The Price System—with its business enterprise, its politics, and its hypocritical piety—can provide the Annihilation. Only Technocracy can provide the Abundance.

—Wilton Ivie, CHQ

★ LONDON.—A British automobile company has taken the wraps off a portable industrial gas turbine which it claims will do the work of diesel engines 10 times larger and heavier.

The Rover Car Company said the small turbine, weighing 116 pounds and developing 60 horsepower, will have a wide variety of uses, ranging from land and ship fire pumps to blast furnace heating and generation of electricity. *—Reuters*

Scrap the Iron Curtain

Columnist Eric Nicol says it is time we scrapped 'the Iron Curtain.' The metaphor has had its day. It should be carted off and melted down to make something we need, like more filing cabinets for Senator McCarthy.

WITH Prime Minister Churchill urging trade with Russia, and more and more reporters and businessmen of the West moving freely in and out of Moscow, it looks to be time we scrapped 'the Iron Curtain.' The metaphor has had its day. It should be carted off and melted down to make something we need, like more filing cabinets for Senator McCarthy.

It's too early to replace the Iron Curtain with the Swinging Door or anything suggesting the completely accessible. Perhaps something like the Shower Curtain would suggest the partially transparent that still must be approached with caution.

I have always suspected that the Iron Curtain was too heavy a metaphor. The exclusion of non-Reds by the Communist countries has seemed to me more of an Asbestos Curtain, a protection against the fire of capitalism, but ready to be raised when it was time for the play to begin.

The Asbestos Curtain has now been raised, and we are getting a look at the stage set that it has taken a generation to build. The stores of Moscow are reportedly full of the desirable things of life, the people are eating better, the theatres are booming, and communism is cracking out of the beetly old carapace to emerge as an attractive butterfly.

This situation must strike Senator McCarthy as grossly unfair, since he has been making a life work of riveting together an Iron Curtain around the U.S. There's nothing more annoying than to copy other people's curtains, only to have them change them before you can get yours finished.

I think that Senator McCarthy and that group of Congressmen called 'the baboons' by Washington newsmen would prefer to see two stout curtains, the Red and

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the Republican, permanently drawn until it came time to lob atomic missiles over them. Thanks to modern weapons it is possible to blast people to smithereens without having to see them or know if there is anything objectionable about them. You can work up a good hate in the comfort of your own office and then give the signal to fire.

Some other people haven't been quite as keen on this simple plan as the baboons have. The English and the French and even the Canadians haven't been able to work themselves into as rich a lather about the Reds as some people in the States. For that reason it may be easier for us to adjust to the idea that Communists are human beings.

We may even be encouraged to find that these human beings are enjoying an improved standard of living. One of the mistakes we have made was to assume that the Communist dictatorship is nearly always more efficient than democracy, at first. But it is one of the perversities of human nature that when you dictate a man into shoes sooner or later he will use them to kick you in the seat of the pants.

That is the new hope of the West, I think. The prosperity of Communist countries means the elimination of the sources of communism: hunger and privation. Everything we do to help improve their standard of living, by trade or travel, is a blow for democracy. I'd like to see nothing so much as a big fat Russian people, comfortable and maybe a little decadent like us. It's these lean types that worry Caesar and me, the Spartans and the Huns.

I'd like to think that the Iron Curtain will be one day replaced by the Bead Curtain, with voluptuous Slav music coming from the other side, and that we'll be looking forward to the annual convention in naughty old Moscow.

Far from being disconcerted by the opening up of a prosperous Red world, we should be only afraid that their people won't have time to go nice and soft. Premier Malenkov looks as though he is leading the way towards the flabby. Now if Senator McCarthy will just stop his hammering and banging, maybe we shall find that Time—not the magazine but the thing it's named after—is still the invincible foe of tyranny.

—Eric Nicol

Adaptation or Extinction

Unless we adapt ourselves rapidly to the new environment created by technology and abundance, we may find ourselves going the way of the dinosaur and other species which could not adjust themselves fast enough to changing conditions.

ACCORDING to the Encyclopedia Americana, **adaptation** is 'an inherent perception in plants and animals which recognizes the incompatability of the organism with its environment, and the power to make such changes as will establish a harmonious or, at least, tolerant relation therewith. The same title is given to the process of gradual change, usually through several generations, necessary to secure such compatible relation.'

For example, a breed of animals will grow a thick winter coat of fur when removed from a warm to a cold climate. Flora and fauna which became unable to adapt themselves to their environment became extinct, and other forms originated in their stead.

The process of evolution was, very briefly, as follows. The earth was first dominated by marine invertebrates, then by fish; then the land was invaded by animal forms. Gigantic spore-bearing plants developed and declined; reptiles of immense size dominated the earth; many bizarre types of mammals rose and became extinct. The species of mammal known as 'man' appeared gradually and dominated the earth, being better able than any of the preceding forms of animals to adapt himself to changing climates and conditions.

Fossils tell the fascinating story of the former existence of a wide variety and an amazingly large number of species of flora and fauna which became extinct because they were unable to adapt themselves to change.

Among the earliest species of the fauna was the **Meganeuron monyi**, an insect with a wing spread of 27 inches. (We are accustomed to thinking of an insect as a small creature, but the word **insect** is derived from a word meaning **to cut in**, for their bodies are cut in, or almost divided. They have a pair of antennae, three pairs of legs, and a pair of wings.)

The **Archaeornis** was one of the oldest and most primitive of the birds known to have existed. Being closely related to the reptiles, it retained some of the reptilian features, having teeth, a very long tail, and four legs, the front legs being much shorter, with three very long claws on each 'hand.'

The dinosaurs, of which there were a large variety, were reptilian animals, cold-blooded, having no mechanism for maintaining bodily heat. Some of the dinosaurs grew as long as 90 feet and weighed as much as 40 tons. They could exist only in a moist, warm climate, and it is probable that during the period in which they lived, great upheavals of the earth's crust brought them to higher elevations, where their environment was intolerable, being much too dry and cold for the huge swamp-dwelling reptiles.

Mastodons were like elephants, but had long hair in the colder regions of the earth. It is not known why they became extinct. Mammoths, some of which, in Alaska, had tusks as long as 12¾ feet, probably disappeared when the forests, in which they ate leaves and twigs, ceased to exist, due to climatic changes.

Mingled with the bones of elephants, mastodons, and mammoths were found the skulls and other bones of prehistoric man. The earliest known races of men lived hundreds of thousands of years before the present time. Java man is believed to have been 'intermediate between modern man and the present manlike apes.' Neanderthal man was 'intermediate between Java man and modern man.'

In the caves where these prehistoric men dwelt, archaeologists found crude stone implements and bones of animals which had evidently been used for weapons. Man's first method of defending himself against other animals and of killing them for food was probably that of throwing stones and of holding in his hands pointed pieces of flint. Later he fastened points of flint to shafts of bone or wood and flung them at his victims. This led to the invention of the bow and arrow, which was man's most efficient weapon until the invention of the gun.

The remains of hearths, pieces of charred wood, and bones which had been seared, found in the dwelling places of Neanderthal

man, proved that he had discovered and used fire. It is likely that he drove the bears and other animals out of the caves with fire, or with smoke, and that he had learned to cook his meat.

We distinguish the skull of an ape from that of a man partly by the relative cubic centimeters of brain capacity. The ape, having a receding forehead and lacking a bulge at the back of the head, has a small brain, while modern man, having a more or less high forehead and a more or less rounded shape to the back of the head, has a much larger brain. Though the animals which lived in his time were much larger and stronger than he, prehistoric man, through his superior brain power, was able to adapt himself to conditions which killed those animals. By the use of fire he was able to survive in cold climates, and the weapons which he invented made it possible for him to hunt and defend himself.

Man's inventive genius continued to serve him well, down through the ages. He devised the harpoon, which was probably his first effective means of catching fish. Later he learned to weave cloth for clothing and to make nets for catching fish. About 5000 B.C. he began to till the earth with a plow, which was first drawn by a human animal, later by oxen. About 3500 B.C. he began to fashion implements and weapons of bronze. The time extending from this date until about 1000 B.C. is, therefore, called the Bronze Age; the period from 1000 B.C. to the end of prehistoric times is called the Iron Age.

As we trace the progress of the human race through the records of ancient and medieval history to the beginning of this century, we perceive that, though the way of living improved, the majority of the individuals experienced a condition, or environment of scarcity, while only a favored few (those at the top of the pyramid) lived in comparative luxury. Production by hand-tool methods could not supply enough so that everyone could have plenty.

Since the beginning of this century, however, especially in North America, more and more of the work of producing goods and services has been performed automatically. Technology has made rapid strides in this direction, and it is now possible for every individual on this Continent to have

an abundance of goods and services.

This constitutes a fundamental change in the environment of man—a change from conditions of scarcity to those of abundance. Whether or not man continues to exist depends largely upon his ability to adapt himself to this new environment. If he does not adapt himself to present-day conditions of physical abundance, he will become extinct, as did the dinosaurs when thrust into environments to which they could not adjust themselves.

The Price System has been used for several thousands of years as a means of distributing goods and services. It functioned fairly well in an environment of scarcity, but it cannot function in an environment of abundance. Businessmen on this Continent are in competition with one another to decrease the cost of production. The greatest factor in this is the elimination of the human worker by the substitution of automatic methods, which not only decrease the cost of production but increase the rate of production to a high degree. As the products of industry become more and more abundant, they have less and less 'value,' but businessmen are not willing to lower prices. Being voracious for large profits, they either curtail production or store the 'surplus' goods to keep them off the market and maintain scarcity and high prices. Our products are purchased largely by money in the hands of wage-earners, whose numbers are being reduced at an ever-increasing rate. Hence we now have a condition which the businessmen call 'automation and saturation,' presenting a problem which cannot be solved under the Price System.

Robots are displacing factory workers, and push-button factories are coming into existence. The General Electric Company has recently announced the development of a steel robot called 'O-Man' (which stands for overhead manipulator) to be used in radioactive areas.

'Weighing over 15 tons, O-Man can lift upwards of 7000 pounds. Its chief job will be to pick up heavy parts, position them and fasten them into place. It can also drill and tap holes, use power wrenches, hammers, or riveters, and, if need be, can handle a sheet metal saw. Resembling a gun turret, O-Man operates from a crane

bridge. Its vertical maneuverability ranges from floor level to the height of the crane bridge. Its "elbow" is a big geared box from which a retractable forearm extends. Its "hand" coming out of the wrist, has two fingers so skillful that it can whip up, slice and serve a cake. Coordinated by remote control levers, its every move is controlled by an operator in a shielded adjoining room.'

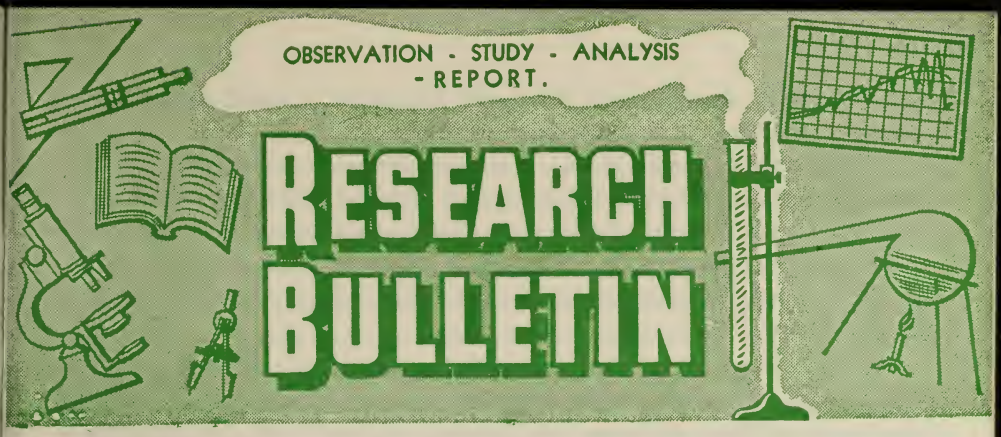
In this case one man controls only one robot, but it is easy to realize the possibility of one man's controlling any number of robots as powerful, efficient, and versatile as the one developed by the General Electric Company—controlling them simultaneously. The products of factories 'manned' by robots will, of course, be far more abundant than are the products of the majority of factories operating today, thus intensifying the saturation of the market under the Price System.

While all this tends to undermine the Price System, rendering it obsolete and incapable of functioning, it is bringing about conditions to which we North Americans must adapt ourselves in order to avoid extinction. We must adjust ourselves to our new environment by installing a mechanism which is designed to function in conditions of abundance. The only way in which we can do this is through the installation of Technocracy's scientific program.

Technocracy is stressing the fact that this Continent has all the requirements for providing a high standard of living for all its citizens, having the highest percentage of the world's natural resources, the largest number of modern factories, and more than a sufficient number of technicians to supervise the operations of those factories.

Since the Price System cannot be used in an environment of abundance as a method of distributing the products of the industries of North America, Technocracy proposes the use of the Energy Certificate as a means of distributing consuming power to the citizens of this Continent. The Energy Certificate will represent the mechanical energy required for the production of goods and services. Each individual of 25 years and over will receive an equal share of this consuming power, which probably will be

(*Continued on page* 33)



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Automated Factories Are Here!

OVER the past few years Henry Ford II has quietly introduced into auto production a technique that might well be as revolutionary as the assembly line his grandfather and namesake created when he tied a rope to a turn-of-the-century 'flivver' chassis and hauled it past workers and piles of parts.

The assembly line, with its fast-moving uninterrupted flow of production from stark chassis to a gleaming new model, made possible mass production at an undreamed of scale and tumbled the price of cars from the reach of only the rich to the level of the average person in North America.

Now, half a century later, the new concept in auto manufacturing is 'automation,' the closest large-scale approach to the automatic factory of the future and the newest threat to employment in thriving industrial nations.

A good portion of the Ford Motor Co.'s $1,000,000,000-plus post-war expansion in the U.S. and Canada has been earmarked for automation, a word coined by D. S. Harder, vice-president in charge of

manufacturing, to describe Ford's new 'automatic handling of parts between progressive production processes.'

While Ford officials think of automation as a highly mechanized conveyor system between the countless gigantic machines which give birth to a modern automobile, the public, nurtured on supersonic speeds and electronic brains, conjures a vision of worker-less factories where raw materials go in one end and finished products are spewn out the other.

So it is no surprise that a visitor to any of the seven 'automated' plants in the sprawling Ford industrial empire comes away with an impression halfway between Mr. Harder's conservatism and the Buck Rogers school which already has rated as obsolete the push-button era.

Ford's new engine plant in Cleveland proves that a factory with few production workers and a host of electric and electronic 'brains' is no longer just a dream of the auto industry. At that plant one serpentine machine, which would stretch 1,545 feet if straightened out, daily pushes 4,600 engine blocks from rough casting to finished block ready for the assembly line, without any help from human hands.

At one stage of the process, the only workers in sight are a couple of relaxed men (perhaps even smoking since 'Young Henry's' ideas on 'human engineering' have been adopted), who sit at a raised station above a series of 'transfer' machines. Flashing lights on a board behind them give them ample warning when one of the hundreds of tools inexorably grinding on below is in need of changing.

The transfer machines, an earlier step in the evolution to the automatic factory, already have grouped together the drills and reamers that formerly were individually operated by workers, into a mass process of automatically controlled operations.

Now automation, with its untiring steel arms and electric and electronic brains, is feeding parts into the hungry transfer machines faster than human beings previously could handle them, with less error and expense.

While Canada's smaller markets do not encourage a stampede to automation, the most advanced ideas in the new revolution will be

incorporated into Ford of Canada's new engine plant at Windsor which is scheduled to go into production later this year.

But beyond its claim to the name and having pioneered the new science, Ford has no monopoly on automation. Its competitors, General Motors and Chrysler, have 'automated' plants, too.

And even in the aircraft industry, where quantity is a secondary consideration to quality, aero engine manufacturers are discovering the quality of work from an automated production line is higher than from the old lines with their skilled workers and gauges.

The revolution has also taken hold in the electronics industry and it forecasts lower prices in the future for radios, television sets, hearing aids and other electrical devices.

A Chicago manufacturer is preparing to turn out 1,000 radios a day on an automatic line tended by only two instead of the usual 200 workers. The secret of the electronics revolution is the 'printed circuit' which is replacing the 'rat's nest' of wires usually found in radio and TV sets. The printed circuit utilizes an electricity-conducting ink stamped, printed, etched or embossed on a flat non-conductor such as plastic or ceramics.

The flat printed surface readily fits into automatic machines and results also in drastic cuts in labor costs by eliminating the complex and costly process of hand soldering. Some production along printed circuit lines is being done by the Canadian General Electric Co. at its Royce Ave. plant in Toronto.

Secrecy still shrouds much of the full story of printed circuits and automatic manufacturing in the U.S. and Canada. Manufacturers are jealously guarding their new techniques to keep ahead of competition, and security precautions have dropped a curtain on much of the progress in the field of radar detection.

Recently, however, the U.S. navy and U.S. bureau of standards declassified 'Project Tinkertoy,' and the public learned that complex submarine detection devices and radio altimeters had been automatically produced. The project was sponsored as an industrial preparedness measure to prove that complicated electronic devices could be

quickly converted to mass production with a minimum of skilled help in the event of war.

There are also projects in the design or pilot model stage whereby electronically controlled tools turn out finished products according to whatever punch card is inserted into the machine.

Automation is not new. In the 1930's the word for it was 'technology' and more recently Dr. Norbert Wiener of the Massachusetts Institute of Technology coined the word 'cybernetics' from the Greek for 'pilot,' or 'steersman,' to describe the new manufacturing theory.

Dr. Wiener, who worked on still secret computing machines in warplanes, believes that in many respects automatic machines are similar in operation to the human brain, nervous and muscular systems.

As an example of Dr. Wiener's reasoning, an outfielder on a baseball team hears a ball being hit and his brain calculates where the ball is going and directs his legs there as fast as possible. As he moves, his brain recalculates at each instant any change in the ball's direction and gives new instructions to the body accordingly.

Similarly, an automatic machine measures its own performance against what it should be doing, and automatically corrects itself. The MIT professor believes the age of the automatic factory is as close as the day when interested parties are prepared to spend as much money and energy in its development as was devoted to bringing in radar in World War II.

But the auto industry, the world's biggest mass production business, is the best example today of automation and Ford's seven automated plant display many interesting facets of the new science.

Electric brains, composed of miles of wires, relays and switches which are interconnected with dozens of machines and control panels, do the majority of 'thinking' on Ford's automated lines. Like policemen directing traffic, these brains keep engine blocks moving from one cutting machine to another. A nerve centre receives hundreds of bits of information continuously from electric switches acting as lookouts. It compiles the data, makes the best possible decision from all the messages, and performs a machining operation. While a human

can only concentrate on a few things at a time, these electric brains direct a multitude of operations without mental strain.

To a lesser degree electronics are used. At the engine plant a unique drilling machine automatically notes where crankshafts are off balance and its remarkable 'memory' tells its cutting parts exactly what and how much must be shaved off to return true balance to the shaft.

At another installation in Cleveland, which Ford maintains is 'the world's most modern foundry,' automation and modernization are carried to such a height that even the workers' lockers are air-conditioned.

At the automated stamping plant in Buffalo, gigantic stamping presses seize large sheets of steel, stamp, cut to size, trim and electric-weld them into auto sections faster than men formerly were able to feed the presses.

And at this plant one worker is paid to watch TV. He is in charge of a monstrous hydraulic press which compresses big hunks of steel scrap into bales. The bales are carried by conveyor belts to train cars on a siding almost 200 feet away. Through his industrial TV set, the worker has an unobstructed view of the siding and he merely pushes a button to move the train cars as they fill up with baled scrap.

Automation and the trend to automatic factories has labor leaders worried. 'It's a real problem and a threat to workers' jobs,' commented Patrick J. O'Malley, a regional director of the C I O United Auto Workers, which holds bargaining rights in the auto plants in Canada and the United States.

But UAW chieftain Walter Reuther, who is also president of the CIO, was not so pessimistic after a visit to one of the automated auto factories. 'I was prepared to see some startling development,' admitted the former production worker, "but what I saw was incredible.'

When pressed whether the union would seek to restrict replacement of men by machines should unemployment follow further automation, the visionary labor leader retorted: 'Nothing could be more wicked or foolish. You can't stop technological progress and it would be silly to try it.' **—Pat McNenly in Toronto Star Weekly**

First Atomic Battery

NEW YORK.—The Radio Corporation of America has developed the first practical method for converting atomic energy directly into electricity.

Brig. Gen. David Sarnoff, chairman of the board of RCA, demonstrated the 'atomic battery' in his skyscraper office recently. He said it may prove to be as significant as Thomas Edison's conversion of electricity into light.

The development was hailed by Sarnoff as a 'major breakthrough' toward the goal of producing thimble-size atomic batteries that could supply electricity for at least 20 years without replacement.

He gave credit for the invention of the battery to Dr. Ernest G. Linder and Paul Rappaport, physicists on the staff of RCA's David Sarnoff Research Center at Princeton, N.J.

The tiny battery may one day light homes, run refrigerators or radios, and eventually result in a match-box-size furnace for the average home which will be good for 20 years.

Power produced by the battery in the recent demonstration was fed into an ordinary telephone amplifier and the resulting tone sounded faint but distinct through Sarnoff's office in the RCA building. A telegraph key was hooked into the circuit and Sarnoff, who started his career as a telegrapher, tapped out two messages.

The first one was: 'Atoms for Peace.' The second: 'Man is Still the Greatest Miracle and the Greatest Problem on this Earth.'

The atomic battery on Sarnoff's desktop was housed in a simple-looking square metal tube. Inside were the 'working parts'—two wafers. One was made of the radioactive metal strontium-90 and the other of silicon crystal.

The strontium-90 gives off a steady stream of beta particles, or electrons. These bombard the silicon crystal and knock electrons off the silicon atoms as they penetrate the crystal. Each electron radiated from the strontium-90 is estimated to liberate 200,000 silcon electrons.

The electron bombardment sets up opposite flowing currents of positive and negative charged electrons. The positive and negative charges are delivered to 'output' terminals, which when wired to a 'load' produce a faint but usable flow of electricity.

Strontium-90, an atomic 'waste product,' is a long-lived atomic material. It has a 'half life' of 20 years, meaning one-half its radioactivity would be dissipated in 20 years.

The experimental battery produced only a millionth of a watt of electric power. That could be increased by placing a number of the batteries in a group.

Dr. E. W. Engstrom, vice-president in charge of RCA laboratories, said the development of the atomic battery is significant because it is the first direct method of converting radioactive energy into electrical power. **—British United Press**

Heat-Resisting Metals

WASHINGTON. — A new kind of synthetic 'metals' which can withstand temperatures up to 2,000 degrees Fahrenheit without noticeable weakening are being prepared.

They are so-called 'borolites,' described by Dr. Paul Schwarzkopf, president of the American Electro-Metal Corporation of Yonkers, N.Y., in a report issued through the office of naval research.

They are chemical combinations of the element boron, hardest of all the elements with the exception of carbon, with various other metallic elements of medium degrees of hardness. These materials are powdered, shaped under pressure, then heated to form a compact mass.

Quite complicated chemical processes are involved, but the end products, Dr. Schwarzkopf says, may go far toward solving some of the most difficult problems of engineers of the future.

'During the war,' he says, 'high-temperature materials were understood to refer to temperatures up to about 1,500 degrees Fahren-

heit. As soon as such materials were at his disposal. however, the engineer began to think in terms of 1,800 to 2,000 degrees. There is no doubt that, as soon as these are available, he will ask for mechanical strength and oxidation resistance at 2,500 degrees and higher. He points out that further progress in construction of gas turbine, jet engines and rocket engines depends, to a large extent, on the availability of such materials.'

The borolites, according to Dr. Schwarzkopf, now seem to be providing the nearest approach to satisfying these demands.

Even greater heat resistance, however, may be attained with similar chemical combinations of metals with the abundant element silica.

One of the borolite materials, he points out, already has found important peacetime applications. Most of these are based on the high chemical stability of the material in contact with molten metals such as aluminum, copper, brass, magnesium and tin. Among the applications are nozzles for spraying molten metals and vibrating rods for producing ultrasonic fields.

'It appears to me permissible to expect,' Dr. Schwarzkopf says, 'that the powder metallurgist will be ready with materials for service at 2,000 degrees Fahrenheit before the designer of engines will be ready to advance to this range of temperature.'

—North American Newspaper Alliance

★ NEW YORK.—A new electronic machine sets type automatically with a beam of light.

The light beam sets a type character on a photographic film. It then sets another alongside the first, then another and another.

It is capable of setting type at a speed at least four times greater than the fastest mechanical typesetter now in use.

The machine is one of the two units of the 'Linofilm' of the Mergenthaler Linotype Co.

One unit prepares the tape which operates the other, the automatic unit. Any girl skilled at typewriting can operate it. Indeed, the principal operating part is a standard typewriter keyboard.

There is a small auxiliary keyboard. By punching these keys, the operator specifies the type face, and the type size, specifies spacing between letters (in units of a 12th of an em) and between lines of letters, cancels out faulty lines, and makes each line come out even according to the desired length of line which is set on a gauge.

—British United Press

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

A FISH-FINDER CAPABLE OF SPOTting a single fish 70 feet below the surface was brought out by Ross Laboratories, Seattle. The unit sends out ultrasonic pulsations of 200,000 cycles per second, has a dial on which a neon light shows the depth of echoes bouncing off an object. Echoes from a fish are short and sharp, those off the bottom drawn-out.

A NEW INSTRUMENT THAT USES a radioactive isotope to give an octane rating of a fuel within five minutes, a procedure that formerly took four hours, is being demonstrated by Central Scientific Co., Chicago. The device can be used as a control instrument in petroleum refining.

TO CONTROL THE LEVEL OF stored material, Hewitt-Robins Inc., Stamford, Conn., has introduced an electronic indicator. A steel probe, placed at the desired level, activates a transmitter as soon as stored material surrounds it. It can be used for such materials as ore, coal, sand, chemicals.

REYNOLDS METALS CO., RICHmond, Va., has a new automatic welding machine to tie an aluminum pipeline together. Currently, the firm is using it to weld the 40-foot sections of aluminum pipe that will stretch 12 miles to its aluminum plant at La Quinta, Tex.

The welding machine is suspended over the pipeline by a side boom—clamps grip the pipe, hold it firmly during the welding process. Welding starts when you push a button; this touches off the arc, starts the apparatus on its way around the circumference of the pipe. When it completes the cycle, the machine automatically stops, returns to its starting position. Then the clamps are released and it is moved to the next weld. Each weld can be completed in about 25 seconds.

A TWO-WAY MACHINE HAS REcently been developed by the National Automatic Tool Co., Richmond, Indiana, for complete automation and flexibility in the loading, drilling, countersinking, tapping and unloading of tractor track rollers. Provision has been made for handling three sizes of rollers without changing the set-up or touching the work by hand.

ATOMIC ENERGY HAS FOUND A new use in the building industry. Huge steel beams of a building were X-rayed in the University of Illinois campus with-

out complicated equipment. Welds were checked by clamping a speck of radioactive cobalt 60 to the top of a beam and sticking X-ray film on the underside with adhesive tape.

A PLASTIC THAT BREATHES HAS been developed by Goodyear Tire & Rubber Co. for use in rainwear, baby pants and other clothing. Thousands of tiny vents permit a good flow of air, yet the vinyl can hold water. The plastic is designed to cut down the retention of body heat, which is high in many plastics.

A NEW BEER DISPENSER INTRODUCED by Kegmaster, Inc., of Chicago, automatically measures every glassful, down to a fraction of an ounce, and uses all the beer in a keg, letting none of it get flat.

Instead of relying on the skill of the bartender, the Kegmaster hydraulically draws each portion into a measuring chamber set to hold the amount of beer to be served with each glass. When the bartender draws a glass, the beer in the chamber flows out for serving. Then, the chamber fills up again automatically. Pressure in the keg is kept constant because the beer line is always closed while the beer is being poured into the glass.

ELECTRONICS CAN TAKE OVER all cooking and baking now—and speed it up a lot. The Tappan Stove Co. and the Raytheon Manufacturing Co. have teamed up to develop what is claimed to be the first home electronic range.

The new range plugs in, just as an electric range does. But it uses less electricity. Once it is turned on, heat is generated quickly—at ultra-high frequencies. A cake can be baked in three minutes, a 16-pound turkey in 75 minutes, a potato in five minutes.

Pots and pans aren't used, because metal absorbs high frequency heat too quickly. For example, bacon for broiling is put on a paper plate, with a paper napkin underneath to absorb grease. The bacon will be ready in a jiffy; the napkin and plate will not be burned. Frozen vegetables are cooked directly in the china dishes in which they will be served. When they are ready, you can reach in and pick up the dish without bothering with holders. The dish won't even be hot.

FOR TOBACCO, LAST OF THE MAjor field crops to require picking by hand, the Long Manufacturing Co., Tarboro,

North Carolina, has developed a seven-man harvester mounted on wheeled stilts that can gather and tie into bundles enough leaves to fill two drying barns a day (seven men working by hand can fill only one barn a day). The harvester can also be converted into a crop duster.

THE LARGEST MACHINE EVER for making newsprint is being installed at the East Millinocket (Maine) plant of Great Northern Paper Co. The machine can make a strip of newsprint 22 feet wide at a speed of 2500 feet per minute.

NEW YORK CITY'S SUBWAYS CAME a step closer to automatic operation recently. The Transit Authority awarded a $9-million contract to the Union Switch & Signal Division of Westinghouse Air Brake Co. for modernizing some of the signals on the IRT branch. The new system will indicate identity and location of each train to a central operator, and will set up switches and wayside signals for the trains.

AN ELECTRONIC COMPUTER WILL be the key element in completely new toll equipment that will go into all terminals and interchanges on the Pennsylvania Turnpike next year. The computer will do the turnpike's bookkeeping and compile traffic density data.

A NEW METAL METER DEVELOPED by General Motors Corp. is said to be able to distinguish between two pieces of steel that differ by only 0.05% in carbon content. Called the Thermoelectric Metal

Comparator, the meter has been used by GM to sort metallic test bars, automotive valves, clutch levers. Also, it has used the meter to detect chills in castings, an important factor in quality control.

Here is how the meter is used: Say you have a bin full of gears; some are of SAE 1112 steel, the rest SAE 1117. When you touch the two metal probes of the instrument to any one of the SAE 1112 gears, the meter gives you one reading. When you do the same to a gear SAE 1117, you get another. If gears of a third SAE rating happen to get into the bin by error, the meter detects these also.

A FULL-SCALE COMMERCIAL PRODUCTION of petroleum products directly from low-cost coal for the first time will start this summer in the Union of South Africa. The M. W. Kellogg Co., New York, will build a plant on top of a big coal field which is expected to produce annually 55-million gallons of gasoline,

4.5 million gallons of diesel oil, 1-million gallons of diesel oil, 1-million gallons of fuel oil.

FIRST ELECTRONIC ENGRAVING machine that can enlarge or reduce a photograph while it is being processed into a halftone engraving has been developed by Fairchild Camera & Instrument Corp., Long Island, N.Y. Fairchild says this machine will eliminate the photographic laboratory equipment that would ordinarily be needed for copying, enlarging or reducing.

TO POWER ALL THE GADGETS ON the auto of tomorrow, Electric Auto-Lite Co., Toledo, is working on an electro-hydraulic system that will do the job from a single source. It will power any one of 27 pushbutton controls, operating everything from the front hood to the luggage compartment.

Business and Finance

THE AMOUNT OF MONEY CANADIAN consumers owed for the things they bought on time rose by $59,000,000 to a new high of $1,836,000,000 in the final quarter of 1953.

A Bank of Canada survey showed that the rise in debt continued in most sectors of the consumer economy—with the exception of buying on time through finance companies which largely finance automobile sales.

Consumer borrowing from banks and other credit institutions was up and so was buying through the use of charge accounts and installment plans.

In the whole of 1953 the consumer credit bill increased by $315,000,000.

NEARLY 10% MORE COMMERCIAL failures were recorded in Canada during 1953 than in the preceding year. Defaulted liabilities rose 11%.

The Dominion Bureau of Statistics reported that the number of business failures under provisions of the Bankruptcy and Winding Up Acts was 1657 last year compared with 1509 in 1952. Liabilities aggregated $32,818,000 against $29,658,000.

★ MONTREAL.—The hated word 'depression' is being used more and more in Canada's sorely beset textile industry.

Closed factories, layoffs and widespread short time tell the story of an industry battling hardship.

Seventeen mills have been closed in the last six months from Nova Scotia to Alberta. Many others are on short time.

Industry and union spokesmen blame the situation on burgeoning imports, mainly from the United States in cottons and various synthetics, such as rayon. British competition is mostly in woollens, and is felt heaviest in Ottawa Valley plants.

—Canadian Press

★ WASHINGTON.—The bureau of employment security says unemployment among the 36,000,000 workers in the United States insured for unemployment compensation increased by 55,700 to 2,206,200 during the week ended April 17.

—Associated Press

(*Continued from page* 20)
more than he or she will need or desire to use.

Technocracy also proposes that each production and service industry form a unit, to be known as a Functional Sequence. The directors of these Functional Sequences will form the governing body of the Continent—the Continental Control, which will coordinate the activities of the Functional Sequences. The Directors will choose, from among themselves, the Continental Director, who will be subject to recall by a two-thirds majority vote of the Continental Control, and the decisions of the Continental Director will be subject to veto by the same procedure.

The educational period in the life of each individual will continue until he has reached the age of 25. Every adult between 25 and 45, who is in good health, will take his place within the Functional Sequence in which he chooses to serve. After 45 the individual will be retired, but he will continue to receive his Energy Certificates until death. Those in the age group below 25 will receive a graduated allowance.

Technology has caused a tremendous social change on this Continent, comparable in magnitude of impact to the great upheavals which changed the climate in which the dinosaurs lived so that they could no longer exist. This change in the environment of man makes it necessary for him to adopt Technocracy's design for a scientific social system in order that he may survive. If environmental conditions change sometime after the institution of the Technate, its design will be sufficiently flexible, because of the services of a Research Staff, to meet the changes as they arise.

Social change has brought us to the end of an epoch—the Epoch of Scarcity—and to the beginning of a new epoch—the Epoch of Abundance. We must adapt ourselves to the new environment of this new era by installing a Technate on the Continent of North America.

Technocracy Inc. is trying to prepare the citizens of this Continent for social change. Unless we adapt ourselves rapidly to the new environment created by technology and abundance, the human race may find itself going the way

of the dinosaur and other species which could not adjust themselves fast enough to changing conditions.

We must never forget the fundamental biological law: **adapt or perish.** If North Americans move forward with science and Technocracy, we shall not only survive but enter the next stage in our evolution and enjoy the greatest state of civilization that mankind has ever known.

—Edith Chamberlain

★ REDDING, Calif.—A fantastic future for the lumber industry, with fast growing limbless trees, stained to decorator colors in the forest—was forecast here recently by a research specialist.

Leslie J. Carr of Sacramento, Calif., president of the Forest Products Research Society, told the Sierra-Cascade Logging Conference 'it may sound fantastic, but . . .'

Forestry genetics is progressing to the point where trees will be grown in a third of the time it takes now. Every tree will be tall, straight tnd limbless.

'Foresters of that age will be carrying hypodermic needles, instead of axes, helping the trees along.'

Present mechanized logging methods will be outmoded. Giant machines will lift entire trees, roots and all, to the mill where every bit of the tree will be used.

Carr predicted that atomic factories would use beams of radiation instead of saws to cut lumber. —*Associated Press*

★ LONDON.—Britain is planning to produce an 'atomic engine' small enough to drive a modern warplane. If successful, the plan will revolutionize aircraft construction, ending the need for outsize bombers and airliners.

Top aviation designers have joined atomic scientists in a hush-hush conference about the matter, following the report that Britain has found the secret of producing a 'miniature' atomic explosion. At Woomera, a bomb no bigger than an artillery shell was exploded, thanks to the invention of a small trigger mechanism.

Now British experts aim to harness this power for industry, where the sheer bulk of any nuclear reactor has always been the major problem.

—*North American Newspaper Alliance*

★ EDINBURGH, Scotland.—British scientists have disclosed that they are developing a 'boss' machine which gives orders to worker machines in 'a truly automatic factory.'

The government's Department of Scientific and Industrial Research revealed the project. An industrial firm which is developing the machine gave the details, and said the gadget probably will be working by the end of the year. —*Reuters*

★ THE PAST is gone and static. Nothing we can do can change it. The future is before us and dynamic. Everything we do will affect it. Each day brings with it new frontiers, in our homes and in our business, if we will only recognize them. We are just at the beginning of progress in every field of human endeavor.

—*Charles F. Kettering*

A World I'd Like

Bertrand Russell, British philosopher and mathematician, tells about the kind of world he would like. With our present techniques we could without excessive labor produce enough food for everybody, provided the population was controlled.

THE technical advances of the last 150 years have brought about a new possibility of general well-being such as has never existed before since there first were men on the earth.

Primitive man suffered from the cold in winter and the heat in summer. He lived in terror of wild beasts. In good times he obtained just enough food to keep him in health. In bad times he died of hunger. There were terrific visitations of plague and pestilence in which whole tribes were wiped out.

It was a furtive, painful, and precarious existence, owing, at that time, not to the folly and wickedness of man but to natural facts with which he could not yet cope. Gradually his intelligence transformed the scene. He made weapons which enabled him to fight lions and tigers, rogue elephants and furious rhinoceroses. He acquired the art of agriculture, which made his food supply fairly secure for about four years out of every five. He learned to keep warm by the use of fire and dry by the building of houses.

By these means men in ancient Egypt, 5,000 years ago, reached a level of well-being—if it can be so called—which until our own day has scarcely been surpassed among Chinese and Indian peasants. But if this is well-being as compared to the life of primitive man, it is utter misery as compared to the life of ordinary men and women in the West.

In the East the peasant and his wife, and their children as soon as they have the muscular strength, toil from morning till night to obtain the food the human frame requires, and get that only in good years. In bad years immense numbers die. At all times most children die before they are grown up. Bubonic plague, pneumonic plague, typhus, smallpox,

Reprinted from THE NATION.

and other diseases sweep through the population, leaving behind them a great swath of death. All this misery is now unnecessary. Given a little wisdom and a little good-will, there need not be anywhere any abject poverty, there need not be great destructive epidemics, there need not be more than a very low child mortality, there need not be excessive hours of labor.

How could this be brought about? Let us for a moment forget all about politics and assume some benevolent dictator, sufficiently trusted for men to obey him willingly and sufficiently wise to make use of all the best technical possibilities. What would such a dictator do? He would realize that hitherto the increase in the productivity of labor has not been used to lighten human burdens. It has been used for two purposes —to increase the welfare of one's own group and to improve the means of killing members of other groups. He would point out that with our present techniques we could without excessive labor produce enough food for everybody, provided the population did not increase up to the limits of subsistence.

I think food would be the very first problem that he would tackle. He would see to it that the best methods of agriculture were taught everywhere, that the most destitute were assisted to achieve some kind of economic security, and that the benefits to be derived from better agriculture were not all swallowed up by an increase of population. He would, at the same time, use medical instruction and public hygiene to cut down the death rate. Having secured a population free from abject poverty, overwork, and premature death, he would have leisure to think about the problems of what those who have never been hungry call the higher life. **—Bertrand Russell**

★ VANCOUVER.—British Columbia's agricultural output may increase by as much as 30% in the next 10 years, Prof. W. J. Anderson of the agricultural economic department, University of B.C., said at a recent meeting of the Vancouver Institute.

However, Prof. Anderson predicted that greater application of labor-saving devices would probably result in a decrease in the province's labor force in the same period. *—Canadian Press*

Blessing or Curse?

No matter how optimistically they may speak, governments are unable or unwilling to cope with the problem of food surpluses. Abundance may indeed be a blessing in a hungry world, but it is largely a curse to them.

A SECTION of the Food and Agriculture Organization Committee on Commodity Problems in which eight nations were represented has been meeting in Washington. Their special task was to study methods for the disposal of surplus farm products. At the outset it was emphasized that the nations taking part were in full agreement, that they regarded the problem as one of distribution and consumption, and that they would not consider nor entertain any proposals aimed at imposing artificial restrictions on world production.

The U.S. Assistant Secretary of Agriculture, John H. Davis, struck the keynote for this attitude when he asserted that the Eisenhower administration regards food surpluses as 'more of a blessing than a curse' and believes that temporary inconveniences are a small price to pay for abundance. He admitted that there was concern —justifiable concern—in the U.S. and abroad at a time when other countries are suffering from food scarcity. He proceeded:

'At the same time many people are equally concerned that efforts to get these stocks to people who need them at prices which will enable them to be consumed, might have a disastrous effect on the world economy. This is the harsh paradox that you have to deal with.

'But we know from experience that it is a real one, and that simply offering these commodities at any price—or at no price—would result in such extreme declines in prices for agricultural commodities as to bring on an agricultural depression. And we also know from bitter experience that agricultural depressions become general depressions.'

Mr. Davis' phrase 'more of a blessing than a curse' is revealing. Apparently the accumulation

Reprinted from WESTERN PRODUCER.

of food in a hungry world is felt to be something of a curse no matter how loudly it is proclaimed a blessing. It is this frame of mind together with the hesitations and confusions to which it gives rise and which it reflects which is at the bottom of the trouble with so-called surpluses.

It seems obvious that, no matter how optimistically they may speak, governments are unable or unwilling to cope with this problem of regional food surpluses. Abundance may indeed be a blessing in a hungry world but it is largely a pain in the neck to them.

This may be partly explained by the fact that governments have never tackled the problem at the top level. When it comes to other matters of international concern the President of the United States and the Prime Ministers of Britain and France meet at Bermuda and thresh things out. When, however, the question of, at one stroke, dealing with surpluses, providing food for the needy, and clearing the way for continuing production is up for consideration it is sluffed off on a subsidiary body such as the F.A.O. which, however commendable its work in other fields, has no real power to deal with it.

This question of food is a major one, not only for the producer and consumer, but for the whole western world, and as the cold war continues it will grow in importance. Is it too much to suggest that it is one which merits and should receive attention at the top level of governments? It is difficult to avoid the conclusion that up to now it has been sidestepped by passing it on to those who are not empowered to deal with it and by pigeonholing and then forgetting their recommendations.

If abundance is to be truly the blessing it should be and in no way a curse the problems to which it gives rise must be tackled seriously and resolved, as with boldness and determination they can be.

★ NEW YORK.—Development of the first punched card transmitter that 'talks' over regular telephone circuits at the rate of almost 1000 alphabetic or numeric characters a minute was announced here by International Business Machines Corporation. —*Associated Press*

Where Are the Machine-Created Jobs?

Whenever talk of the growing production and use of machines in industry or agriculture causes obvious fears, they are quickly stifled by the battle-cry of business, politics or labor unions that 'machines create jobs.'

NORTH Americans over the past few decades have become so used to advertising slogans and pet sayings of politicians which, although intriguing in phraseology and pleasant by implication, usually have no relationship to reality. In fact, they are designed to take the minds of the people away from reality, and to condition them into believing that the 'bill of goods' is desirable. Those goods may be actual merchandise which a firm is endeavoring to sell by way of advertising with some slogan the highly paid advertising men have dreamed up, or it may be a belief which some group is trying to put across so as to further their own plans.

An example of the latter is: 'Free enterprise is the American way of life.' That phrase has a catchy ring to it, and taken without examination might appear to portray something pleasant and desirable. Of course, those who promote such slogans never attempt an analysis, nor do they tie them to physical reality.

In the free enterprise plug, for instance, the fact that enterprise today cannot be permitted freedom is completely ignored, and no attempt is made to define the 'American way'. It is a vague concept in the mind, and probably each person has a somewhat different concept. To some it may mean a comfortable home, a family and a pleasant occupation. Others might think in terms of a fortune at their disposal and leisure time in which to live one grand spree of entertainment.

No doubt, those underworld characters of the larger cities who operate organized crime would resent any encroachment upon their American way of obtaining a lavish standard of living through methods of coercion, graft, physical violence and well planned coups. Their American way includes the privilege to buy the necessary legal talent it requires

to obtain acquittal when charged with the many crimes they have obviously committed.

The one slogan which has been promoted probably more than any other, and has received the widest acceptance, is the one that 'machines create jobs'. It has been seized upon by various groups at one time or another and used to promote some point they were anxious to have foisted upon the pliable public. It has had an interesting history, this glib phrase, and when we examine the ways in which it is used we find it serves as a defence against the crystallizing knowledge by the general public that jobs are on the wane.

Whenever talk of the growing production and use of machines in industry or agriculture causes obvious fears they are quickly stifled by the battle-cry of business, politics or the labor unions that there is nothing to worry about, the purchasing power is not being jeopardized by the increasing use of bigger and better machines, because 'machines create jobs'.

To find out how such a belief received acceptance and became so successful in acting as an opiate to lull the citizens into a feeling of security we will have to go back to the time when machines first became widely known as a means of doing work, when they began to compete with what had been the only important means of doing work prior to that time—the human machine.

One would suppose, viewed from our place in mid-20th century, that the advent of a machine to replace wearisome toil would be hailed with thanksgiving instead of ridicule, scorn and abuse as well as outbursts of violence. We must remember, however, that in spite of the belief instilled into us by the moralists that 'we must earn our bread by the sweat of the brow' and that 'the devil finds work for idle hands,' our actual concern for adequate and constant toil for every individual has been the realization that only through the ability to hold some kind of a job do we obtain the necessary purchasing power to secure for ourselves and families the necessities of life. When we are honest with ourselves we must admit we do not care for work itself, but for the fruits of that effort.

When engines were devised that

promised to do the work human muscles had been doing for centuries, and when mechanical equipment which could duplicate the human movements was designed and powered by those engines, a wave of alarm spread among the workers. They visualized, not increasing production to make their lives more pleasant and release from long hours of labor in which to enjoy it, but rather a discontinuance of purchasing power and ultimate starvation.

So it was that a period of violence against the machine began, and laborers in gangs forced their way into factories and smashed the equipment which had been installed. Their fear of the new method was so great, and the action so direct that the factory owners of necessity took counter-action. Recognizing the advantage to be gained by installing new and better machines as they became available, and at the same time understanding the cause of the opposition, they took steps to change the feeling of the workers toward the technology. So the slogan 'machines create jobs' was brought out.

It was designed, of course, to allay the fears, and to cause acceptance of technology in the belief it was producing what the moralistic dogma of the day presented as the most important thing in life. For, ecclesiasticism, aided and abetted by its partners, business and politics, as a means of ensuring an adequate labor force deliberately fostered the idea that a job was a man's most prized possession. Because of ignorance, that belief has had a tenacity capable of carrying it into the present day where the technological method is accepted and we find some still subscribing to, and patterning their actions after, the false premise that machines do create jobs.

It is obvious to anyone who does even the slightest investigation that when a machine is installed to replace a man it has relieved that man of his function. Because a machine does the work faster and works practically continuously when allowed to, it is apparent that it is going to produce more than the man it replaced. Therefore a machine, once installed, will do the work of several men, and usually does it better.

The proponents of the 'machines create jobs' theory have several

examples with which they try to uphold the claim, and the gullible of the public and those who want to believe accept them at face value. For instance, they point out that as more and more machines are installed this creates employment building and servicing them. They mention also that machines, by doing work more efficiently, cut down the cost of operation and so allow goods to be produced at a price more people can afford. So they say, there is more demand and the consequent upswing in production causes more employment.

Then, of course, there is the one about new industries coming into existence, such as the automobile industry, which employed many times the men who found work in the carriage industry it replaced. Another thing the 'full employment' boys pin their faith on is more and fancier gadgets for the home, office or public work department — deep freezes, air-conditioners and fly-proof garbage disposal trucks. They all create employment in their manufacture we are told, so there is no need to worry about the machines taking our jobs away from us.

Now all these things have a certain amount of validity, and of course today we do have industries which did not exist fifty years ago employing thousands of men. Radio and television provide jobs in manufacture, transportation and installation as well as maintenance. Because of our gigantic productive mechanism today we soon saturate a market with goods, and because the more menial jobs are falling prey to machines we find more personnel going in for the technical fields such as television maintenance. Television is comparatively new, in fact it is only since the termination of World War II that it has been developed to any extent. In that short span of years, because of our productive ability, today 58% of the families in the United States have a television set. Canada is rapidly catching up, and it is not lack of production but a dearth of transmitters that holds back faster progress. Today the television field is the bright spot on our economic horizon, but already it is nearing saturation.

While our Continent was in the stage of its most rapid growth, when the vast open spaces were being filled with settlers from Europe and the older and more

heavily populated eastern areas, the machine was in its cruder and less efficient phase. As the machine improved, the population advanced westward and our economy was in its adolescence and so required ever greater amounts of production.

Eventually, however, as in any physical growth, a point of inflection was reached, where the rate of growth started to slow down, and soon arrived at an apex. That apex as far as total man-hours in industrial employment is concerned was reached in 1919.

In view of conditions which have prevailed since, including World War II and its tremendous demand for industrial output, it is hard to realize that we never again reached the figure of man-hours in industrial employment we had just after World War I. That is the case, however, and in spite of the ballyhoo about the tremendous employment during World War II when long lines of factory and shipyard workers filed in the gates each morning with relieving shifts in afternoon and evenings, the total never did equal the amount of man-hours that were employed in 1919. Remember, we are speaking of **man-hours,** not man-days, nor total employment. In the 1940's we had more people employed, but they were working an average of 40 hours per week, in contrast to the 1919 week which was often closer to 72 hours.

There was a considerable difference in results produced in the two periods also, for in World War II the output was far and away greater than our effort for World War I. As an example of the difference in how we produce now in contrast to the earlier era: In the former year it took over 1200 man-hours to produce a model T Ford Car. Now a much better car is produced with about 50 man-hours. In other words, one workman today with modern tools produces many times what one workman did in 1919 with what was a modern tool in those days. It is simply a case of our technology improving and increasing year by year until the difference in method, rather than being imperceptible, has become obvious.

Now if the machine has taken so many jobs from workmen, and if it has not created any amount of new ones, where do all the former workers find employment

today? How do they make a living? As already mentioned, the work week has been reduced, and instead of the 72 hours a week our grandfathers devoted to factory or mine the workman of today does a stint of 40 or less. The labor unions take the credit for improving working conditions by negotiating shorter hours, and of course they have been responsible. It was in desperation, however, for in their attempts to maintain employment for their union members it became apparent that it could not be done without shortening the hours per worker. When the employees obtained shorter weeks with the same pay it increased cost of production, and the employers retaliated by installing more efficient equipment and doing away with part of their staff. It is then a constant see-saw with the result being a unidirectional progression toward complete automaticity.

As a result of this trend the displaced workers have been forced into the non-productive lines of endeavour. These non-productive activities include business, the accounting branch, advertising, and one of the greatest employers of non-productive personnel, salesmanship.

Technocracy is not concerned with the merits or demerits of salesmanship, advertising and business operations. It makes no difference whether you feel they are necessary and important functions or if you happen to think the people conducting them are simply living off those who actually produce the goods. We have a Price System in operation — a system that depends on the buying and selling of goods and services — and those non-productive categories are part of it. We are simply making an analysis of our situation today, so as to show the trend of events, with the view of pointing out the necessary steps which must be taken to ensure our future well-being. This analysis has nothing to do with personalities, likes and dislikes.

We find therefore that as technology became more efficient and factories progressed from hand-tool methods to hand-operated machines, and from there to the completely automatic process, more and more men find they are no longer needed. Because their means of livelihood depends upon an income from some source they

turn to something else, and find that in salesmanship or advertising there are more openings. Now every time a man is liberated by a machine the production increases, because of the efficiency of the new machine. When that trend is Continent-wide the result is such an outpouring of goods that the available purchasing power is insufficient to buy it. That is why the sales force has increased so noticeably. In an effort to sell their produce, industries have put more salesmen in the field, who apply the pressure and persuade people to buy things they cannot afford. They buy them on time, hoping the future holds brighter prospects. Finally the governments of Canada and U.S. are forced to step in and take up the surplus so it will not depress prices below cost of production.

To sum up: We find the machines do not create jobs. They create an ever greater production, and society creates jobs in an effort to supply purchasing power. That the discrepancy between the goods we produce and the jobs we manage to create will continue is attested by some of the recent information we have received to the effect General Motors plans to spend $1.5 billion on new plant and equipment in the near future. Ford Motor Company of Detroit has just completed a new engine manufacturing plant, and is planning on seven more. Now those plants are all designed to turn out more production with many less employees than the ones they will replace.

A look at some other statistics shows us that the population of U.S. has increased 29 million since 1940, and although business is rubbing its hands with glee at the prospect of 29 million more customers, actually it will only tend to increase the unemployment by a comparable amount. For, when we see that the gross national production of U.S. has increased from $82 billion in 1929 to $367 billion in 1953, it gives us a picture of the stupendous amount of purchasing power we will have to create through jobs in order to keep the economy going.

Technocracy has been pointing out the developing trends for many years now, and as long as there was a surface appearance of prosperity the public was not too interested. In spite of the social apathy we have continued our

program of investigation and analysis, knowing that when conditions finally come to a peak the citizens would come awake with a sudden jolt. The very definite indication of an unemployment problem which is apparent of late has started the awakening, and one of these days a great many people will be wondering what has happened. Deprived of an income through loss of employment they will be in a precarious position with the inflated prices and many social obligations such as insurance, car and home payments and cost of education in today's society.

Technocracy is bringing these problems to your attention and showing you the desperate need for installing a method of distributing our abundance so it will serve a useful purpose. Such a method is presented in Technocracy's blueprint, and **now** is the time for you to be concerned.

—Ed Broderick

★ WE'VE JUST come upon a summary score-sheet of the mess the Americans have got themselves into with their farm price support program.

Here's the situation on a couple of items :

Uncle Sam has bought and stored 261,000,000 pounds of 'surplus' butter and more surplus is piling into government-paid-for warehouses at the rate of 7,000,000 pounds a week.

Getting rid of the stock in the next few months is essential because despite refrigeration and some turnover in stock most of it is due to go rancid before long.

U.S. retail prices are now more than twice margarine prices. Americans are eating less than half as much butter as they did 20 years ago. Per capita consumption for butter and margarine is now about equal.

In addition to butter, Uncle Sam has in storage under the same price support legislation 27,000,000 pounds of Cheddar cheese and 449,000,000 pounds of dried milk.

Isn't politics wonderful ? *—Financial Post*

★ OTTAWA.—Mines Minister Prudham has announced that Canada is the first country in the world successfully to complete a test run of an exhaust-heated gas turbine engine.

Prudham told the Commons the test run was made by scientists of the gas dynamic laboratory of McGill University, Montreal, who are experimenting on the design of a coal-burning engine to drive locomotives or electric-power units. The design of the engine has been in the experimental stage for three years under sponsorship of the Department of Mines and Technical Surveys.

'The experimental engine, which includes new features designed to make the use of coal practical, was recently completed and the test program begun,' Prudham said.

—Canadian Press

'Explorations in Science'

A review of Explorations in Science, *a recent book by Waldemar Kaempffert, science editor of the* New York Times. *He tells about the work of the scientists and the technicians which will revolutionize our lives in the near future.*

WHETHER we like it or not we are all participating in a world-shaking revolution—a revolution of far greater importance than all the miserable political conspiracies presently spreading terror and uncertainty through every nation in the world.

The shapers and moulders of mankind are not the political schemers but the scientific dreamers, experimenters and technicians. They are not to be found in any Politiburo or even Presidential cabinet. Rather they are to be found in the great experimental laboratories.

What are these quarter of a million brilliant men and women of many races and nations doing to change our lives? What benefits can we expect from their dedicated exploration of our mysterious universe?

According to Waldemar Kaempffert, science editor of the **New York Times,** who writes with admirable lucidity and simplicity upon the most difficult of subjects, we may expect in the not too distant future :

An almost infinite number of new fibers, fabrics and even foods from the various combinations of the amino acids—leather far superior to anything derived from animals today, 'mink coats for perhaps fifty dollars,' excellent digestible proteins, and possibly, after many years of experiment, a close approximation to 'living cells.'

Power directly from the sun to heat our households and run our machinery at virtually no cost after the original installation of our solar engine on the roof.

An artificial satellite (for good or ill) manned by scientists able to observe the entire earth as we can now observe an orange in our hand.

Atomic motors (already under construction).

Transportation at supersonic speed.

A cure for cancer.

New methods of raising the treasures and cargoes on the bottom of the sea.

Mr. Kaempffert is not so rash as to insist that all of these possibilities or probabilities are certainties. He is careful not to commit himself to any time schedule for the successful application of inventions now in their infancy. But he may well bolster some of his arguments and predictions by pointing out that less than 100 years ago any man who might have pictured our present world of motorcars, airplanes, radio, television and particularly atomic bombs would have been considered a mad and doubtless a dangerous dreamer.

Yes, all of these miracles and many more may come to pass if we can avoid the threat which is bluntly and brilliantly presented in the first chapter of this book on fission and fusion: the Atomic Bomb and the Hydrogen Bomb.

Man's conscience and his political institutions have lagged hundreds of years behind his scientific imagination. His tribal and racial jealousies, his prejudices, bigotries and blind hatreds make him seem little more enlightened or 'civilized' than he was at the dawn of history. Yet his inventions now make it possible in a moment of mania virtually to depopulate the earth.

On the other hand we have always had a superior type of man who deserves a degree of respect he seldom gets. The old Persian astronomers who four thousand years ago devised an excellent calendar would soon adapt themselves to the 200-inch telescope at Palomar (capable of penetrating our vast universe to the depth of one billion light-years). A Galileo or a Newton would have little trouble understanding Einstein. And the great thinkers of all eras would immediately recognize the source and nature of the bigotries now seeking to chain the mind of man.

If we can use our wonderful inventions for good rather than evil we may yet live to see a great and peaceful world. **—Sterling North**

★ MONTREAL.—Dr. D. C. Brunton, president of Isotope Products Ltd., Oakville, Ont., said here that push-button industry is no longer a myth and that it now is closely approached in certain industries through the use of isotopes.—*Canadian Press*

They Say . . .

Comparison

The Detroit Edison Company of Michigan, U.S.A., and the Hydro-electric Power Commission of Canada have initiated interchange of electric power with a ceremonial unveiling of plaques inscribed 'Partners in Progress.' Though the U.S. private system and the Canadian public system will now pool their generating capacity, there's no danger that Canada's 'creeping socialist' power will infect us with its low-cost virus. A special Act of Congress, passed in 1953, exempted Detroit Edison Company from accountability to U. S. regulatory agencies where international exchange is concerned.

According to the Federal Power Commission, the relative cost of 250 kilowatt hours a month is:

In Detroit, Michigan	$7.74
In Windsor, Ontario	$3.33

The average household in Windsor uses 286 kilowatt hours of 'juice' a month and pays $3.64 for it. That's nine cents less than 100 kwh costs ($3.73) in Detroit, where average use is only 133 kwh per month per home.

High U. S. taxes aren't solely responsible for the rate difference. Detroit Edison Company enjoys tax-amortization concessions from the U.S. on $65.5 million of its investment.

—The New Republic

'Push-Button Economy'

In 1900, it required 100 men to do the work which 10 men can do today. In the future, this will be reduced to one man.

We are rapidly approaching a 'push-button economy' as a result of our scientific and mechanical progress. Our American friends express it as the automation trend. The 'labor force' will have leisure time for more home life, accompanied with opportunities for spiritual, cultural and recreation development.

—Harold J. Chater, Ontario Provincial Statistician

Unemployment Mounting

The latest estimates of the U.S. Bureau of Employment Security confirm that unemployment is both increasing and spreading throughout the nation. Three ma-

jor and 12 lesser areas have joined the 'distressed area' group in which 6% or more of the working force is unemployed. There are now in America a total of 80 'distressed areas' encompassing 106 cities and towns.

These figures are not abstractions. They represent wage earners whose skills are wasted, and families that drink milk and pay rent. **—The Nation**

'Recession' Is Here

Steel production is now down to about 68% of capacity. Last May, 1953, it was 100%. What is true of steel is true of national output as a whole. Total U.S. output is running about $25 billion a year below the full capacity rate which Ike inherited from Truman.

This is probably the real danger of the present situation: a 'recovery' will ultimately occur but not one that brings us back to full production. It's not certain Republicans really want full production; they may prefer a comfortable 'labor reserve' (i.e., unemployment).

—T.R.B. in New Republic

★ NEW YORK.—A battery made of silicon and powered by the sun has been developed by Bell Telephone laboratories.

The battery already can create enough electric power to accomplish a number of things, such as carry a voice a short distance over a telephone wire, broadcast from a miniature portable radio transmitter and run a toy ferris wheel.

Company officials say that with further development the sunshine batteries promise to supply all the power for rural telephone lines. They would supply power even on cloudy days, and charge up storage units to permit night operation.

The invention was demonstrated to reporters at the Bell Telephone laboratories at Murray Hill, N.J., and made public recently. The battery shown was the size of a man's hand.

The battery is made of razor-thin strips of silicon, the material of which sand is made. As sunlight strikes the silicon, an electric current is created in the strips.

The batteries for rural telephone lines would be a foot square.

The sunshine batteries, as explained by Bell officials, could run walkie-talkie radios and mobile electrical equipment for military or civilian purposes. If they could be made big enough and cheaply enough, they possibly could provide current for lights, television sets and refrigerators in homes.

Inventors of the new battery are G. L. Pearson, physicist; G. S. Fuller, chemist, and D. M. Chapin, electrical engineer. *—Associated Press*

★ OTTAWA.—Canada's electricity production hit a record 65,489,253,000 kilowatt hours during 1953.

The previous high was 61,786,035,000 in 1952, the Bureau of Statistics reported. *—Canadian Press*

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the membe. to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office. or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Whatever the future of Technocracy, one must fairly say that it is the only program of social and economic reconstruction which is in complete intellectual and technical accord with the age in which we live.

—Encyclopedia Americana

TECHNOCRACY DIGEST

AUG. '54

Corruption of Function

Investigate McCarthy!

'Human Fertility: The Modern Dilemma'

Electronics For Tomorrow

The Traffic Disease

Watch That Word!

The Automatic Factory

Paying Both Ways

No. 153

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AUGUST, 1954 **No. 153**

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The Quarterly Survey

Productivity Rising

Prior to World War II, the annual increase in U.S. output per man-hour was about 2½% a year. In the postwar it has averaged about 3%. At this rate 1,500,000 additional jobs will be needed by next August to take care of American workers who will be displaced by rising productivity, and 900,000 more will be needed to take care of the growth in the civilian labor force.

Actually, productivity may not only rise but spurt ahead in the next 12 months, just as it did toward the end of the 1949 recession. By the first quarter of 1950, industrial activity had recovered enough to show a 2% gain over early 1949, yet manufacturing employment was down 4%. Why? Because from 1948 until the outbreak of the Korean war, productivity rose over 6% a year.

Unemployment to Jump

Unemployment in the United States will nearly double over the next year at the present rate of economic activity, according to a prediction by the National Planning Association in Washington. It has urged the U.S. government to consider action to end 'inexcusable' idleness of part of the country's gigantic production machine.

The Association's economic report stated that if the economy runs along over the next twelve months at about the same pace, a $25,000,000 gap will develop between national production and the level of production that would provide full employment.

Burck in The Chicago Sun-Times

"You Sure Knocked Some Loyalty Into Them, Senator"

The study group, a private organization of businessmen, labor union leaders, economists and bankers, said that 'measures should be considered to promote expansion' of the economy to 'full employment' levels.

Bankruptcies Up

The number of business failures in Canada climbed to 680 in the first three months of 1954, a 30-year-high. Showing up in all industrial classifications and all regions, the failures were almost double the 382 in the similar 1953 quarter, the Dominion Bureau of Statistics has reported.

Liabilities owing by these bankrupt firms rose to $17,660,000, almost two and a half times greater than the $7,151,000 in the first quarter last year. Average liabilities for each failure rose by 39% to $26,000 from $18,700.

Quebec's business mortalities soared to 506 from 287 last year. Ontario's doubled to 104 from 49. Failures in the Atlantic area increased to 15 from eight and in the West to 56 from 38.

★ SAULT STE. MARIE, Ont.—Two aldermen say there is so much unemployment in this city that some persons are literally starving because they have no money to buy food.

They told city council that malnutrition is widespread and urged immediate action. Aldermen Anthony Nino and Peter King said they knew of people who weren't getting enough to eat.

The major employer here is the Algoma Steel Corporation, which has laid off part of its staff. The company recently completed a $75,000,000 expansion program and many men were out of work when it was finished. *—Canadian Press*

★ EDMONTON.—Unemployment emerged as one of the key problems facing the CCF national convention here.

As more than 200 delegates met for the opening of their 13th annual convention they heard :

1. A labor spokesman express fear that this autumn might bring Canada her worst unemployment in history.

2. The party's national council advise through its annual report that the ranks of the jobless now total approximately 135,000 more than they did at this time last year. *—Canadian Press*

★ BOSTON.—Publishers' representatives recently viewed receiving apparatus of a newly developed, electronic teletypesetter method that transmits at 10 times the speed of those now in operation.

The new equipment operates much like standard apparatus, with the major exception that both sending and receiving distributors operate electronically as opposed to the mechanical distributors now in use. *—Associated Press*

Corruption of Function

Under the present system, the arts of politics, commerce, and applied superstition dominate and corrupt the function of people's living together in the society. Individuals have become the victims rather than the beneficiaries of the social organization.

HISTORICAL man has, in the process of l i v i n g, invented numerous facilities for achieving the goals and improving the functions involved in that process of living. For example, plant cultivation was developed as a facility for providing a larger and more stable food supply; likewise, livestock raising. The food supply, in these instances, was man's goal, while t h e techniques of raising the food were merely the facilities for achieving that goal. Except as a means of suppling food (and certain o t h e r materials), farming has no p l a c e in man's scheme of living. In other words, there is nothing sacred about a farm in itself.

In a similar way, a house is a facility—to provide shelter, protection, privacy, and storage space for man's supplies and possessions. An automobile is a transportation facility. The farm, the house, the automobile primarily are facilities for achieving certain objectives of a functional nature, but they are not goals in themselves. If the objectives could be arrived at in another way, these facilities could be dispensed with. None of these are inherent in human nature as prerequisites or accompaniments of living. They all were invented as incidental afterthoughts, following many millennia of living without them.

The distinction between an objective and the facility for achieving that objective is not always recognized; and the two are not always viewed in their proper relationship. Very often, the facility is mistaken for a goal in itself and worshiped **per se** far out of proportion to its place in man's mechanics of living.

A great many regulations have been established in various places at various times restricting, prohibiting, or compelling the eating of certain kinds of food. Many of these undoubtedly a r o s e out of scarcity of supply or a tendency

of certain foods (at least seasonally) to impart poisons or infections to the human consumers. The regulations, in such cases, were facilities for better living. Other regulations were instituted merely to stimulate commercial traffic in certain foods, for instance, fish-eating on Friday. In the course of time, these regulations became regarded as sacred goals, to be dutifully obeyed, although the original reasons for them may have become lost in antiquity or no longer apply.

As a modern example, we can point to the automobile. It has a useful function—to transport people and materials from one place to another. So far, so good. But, then, this function has been attacked by many agencies of corruption, which could not leave 'good enough' alone. The style artists went to work on the automobile and treated it as an objective—as an art-form in its own right, to be revered and displayed. As a consequence, the car has become so decorated with chrome and shining color that, among other things, the glare has become a handicap to efficient driving, particularly in bright sunlight. The decorative colors that used to embellish the car do not always provide maximal visibility, which is a significant factor in accident prevention. The surface finish outside and the upholstery inside have become regarded to be almost as important as the transportation function. In fact, it has become so important in many instances that the outside finish and the inside upholstery be protected from marring that one becomes reluctant to use the car for transportation except under the most fussy of conditions.

Other corrupting influences have been loosed to work their havoc on the automobile by various commercial interests. Parts are designed to cause trouble after a certain number of miles—to run up costs to the operators and create obsolescence in the car, thereby contributing to its being scrapped for junk at an early date. Frequent need for repairs and overhaul stimulates the auto repair business and promotes more rapid turnover in sales. Another corrupting influence is that of the fuel merchants, who use pressure against the development of high fuel efficiency, so that there will be a maximum demand for their products. The notoriously

wasteful and inefficient batteries long used in American cars have become the subject of a national scandal recently; but they continue to be installed in the new cars.

Automotive engineers could produce a simple, versatile, standardized transportation vehicle at low cost; one that would endure for many years, be easy to repair, and operate with a high fuel efficiency. Continued research normally would tend to improve these factors. As it is, the commercial interests and the style artists have prevented the highest functional development of a transportation vehicle, and they have made it nearly prohibitive in cost.

In the American bourgeois home, one may find furniture which has been made so elegant through applied art that its function is almost lost sight of. In order to protect the furniture from blemish if used for its intended purpose, protective covers are fitted over it. But, then, art has also been applied to the covers and they, in turn, have become so elegant that one must be cautious in the use of the furniture so as not to mar the devices that are employed to prevent the furniture from being marred.

We are all familiar with what art has done to dinnerware. Cut glass and gold plate, for instance, are luxurious art objects rather than serviceable aids to functional living. And see what art has done to that simple little device, the salt shaker.

We won't discuss clothes in this connection. They speak for themselves.

Much of this type of corruption was inspired by class distinction among earlier people; and it is still perpetuated on the basis of quasi class differentials. In the 'good old days,' if something became socially acceptable as a facility for improving comfort or function, the Upper Class tended to corrupt it with elegance, partly to enhance it as a prestige factor for those who could afford such elegance and partly to prohibit the lower classes from enjoying it.

The same principles apply to nearly all classifications of gadgets which are facilities for general use by the population, whether in the home, on the road, or in places of recreation. With reference to the last of these, note the degree of elegance and ex-

pense which has developed around golf, hunting, fishing, and skiing.

Only in those functional fields where art has not been permitted to enter is the major emphasis on function rather than appearance; for example, in construction work, in the workshop, and in research laboratories. We will admit that, in many instances, such things as neatness, cleanliness, and general appearance in these fields could be improved, even to the enhancement of function; but that is a 'crime' of default rather than one of commission. It is when art or commercialism (usually both) enters and alters things for the sake of appearance and profit that function suffers the most.

Perhaps, nowhere has function become more corrupted than in the field of social relations. Crude codes of conduct were early established among primitive people as facilities for carrying on social intercourse between individuals and groups; and, later, these codes were expanded to facilitate intercourse between tribes and nations. So long as the codes were kept simple, were direct and unmistakable in their connotations, and were designed to facilitate mutual understanding and serve as a means of living together, they were functional and useful. But soon—alas, very soon—art entered to corrupt the functional efficiency of these simple codes of conduct. There developed the art of etiquette, the art of diplomacy, and the art of being ladies and gentlemen. That is when hypocrisy, double-talk, and pretense entered to corrupt the functional efficiency of the facilities of social relations—the elementary codes of conduct. Social relations gradually became more complicated and more indirect in their approach. Machiavelli was one of the world's greatest artists in the field of diplomacy, and the principles which he delineated still prevail in all major fields of social relations.

Because of the inefficient and round-about approach to a goal followed by diplomacy, national and international affairs have become two-faced and deceptive. If you would promote war, you must first propagandize for peace. If you wish to commit military aggression, you must organize for defense. If you want the people to make war on Russia, you first get them to hate Germany. Consequently, diplomacy becomes so

confused in misdirection and double-talk that sometimes the political leaders become caught in their own meshes. That evidently accounts for Britain's and the United States' becoming involved in World War II on the opposite side from what their leaders intended.

In keeping with this same machiavellian principle, modern nations sent Christian missionaries to foreign countries to lay the lines for political intelligence and economic intrusion. Now the United States is fostering a Point Four program of aid to backward countries, supposedly for humanitarian purposes; but there is every reason to suspect that the real purpose is to explore and locate the mineral deposits in those countries for later 'development' by American corporate enterprise.

The simple social function of boy meeting girl for the purpose of mating has become so complicated (particularly among the 'better class') by social art, commercialism, and moral philosophy that it is a wonder that mating is ever achieved. In fact, a high percentage of the more 'refined' and more of the less 'refined' individuals simply rebel and by-pass the complications. This by-passing the established complications is what constitutes a significant segment of that much lamented realm of human conduct known as 'juvenile delinquency.' However, delinquency itself is developing into a social art, with its accompaniments of drug and alcoholic de-inhibitors, its sub-legal quests for finances, and its artificial codes of pretense and bravado. Again, primitive simplicity is becoming corrupted by social art. So that, in its traditionalized form, juvenile delinquency is no more suitable as a functional pattern of social relations than is adult propriety.

In order for a large group of people to live together as a social unit, laws are established as facilities to define the limits of permissible behavior. As functional facilities, these laws normally would cover the basic requirements for the common defense, internal tranquility, the sanctity of persons and of property, the general welfare, and the integrity and stability of the social group. We need not dwell for long on the successful application of these facilities in modern societies nor on the extent to which function

predominates over chicanery in the laws of most nations. The Big Story is to be found in the corruption of function.

We learn that in any applied system of laws, the arts of politics, commerce, and applied superstition soon dominate and corrupt the function of people's living together in the society. The individuals tend to become the victims rather than the beneficiaries of the social organization. The administrators, instead of being the trustees of the group's social objectives, become the masters and exploiters. The social objectives become corrupted through the distortion of the facilities for achieving those objectives and through a tendency to worship the artforms of the corrupted facilities rather than the fundamental social objectives themselves. This is no better illustrated than by means of the social and political history of the United States.

The 'Founding Fathers' of the United States outlined the national social objectives in the form of a Preamble to their Constitution. No doubt, as subsequent events indicate, they had their fingers crossed when they adopted the Preamble. Certainly, the Articles of the Constitution and the subsequent Amendments and laws of implementation bear scant resemblance to the objectives set forth in the Preamble.

The first objective, 'to form a more perfect Union,' is too vague to have specific meaning except in a general sense and, therefore, it is subject to a wide variation of 'interpretation.' In any event, the doctrine of States Rights recognized in the Articles and Amendments of the Constitution and in subsequent legal decisions, and eulogized in numerous political pronouncements, is the antithesis of any literal interpretation of a 'more perfect Union.'

The second objective, to 'establish justice,' likewise is a vague philosophical phrase, likewise subject to a wide variety of interpretations. We still do not have a clear definition or concept of 'justice.' For example, two separate persons may commit murder under similar circumstances, but in different localities or at different times; and one may be hanged by the neck until dead while the other is set free to go about his usual business.

The third objective, to 'insure domestic tranquility,' is more de-

finite in the general sense, but the permissions, prohibitions, and compulsions that have been passed into law, altered, repealed, reinstated, and revised again and again throughout the 48 'sovereign states' and the District of Columbia, separately and independently, have become too complicated and confused to command respect. As a consequence, the United States has had no domestic tranquility in a definable, functional sense; rather, a simulated tranquility persists most of the time in the form of a tenuous truce achieved through an approximate balance of opposing pressures. When these opposing pressures become unbalanced, violence is the result. The Civil War was one of the more catastrophic of these imbalances. Labor - Management fights represent lesser examples.

The fourth objective, to 'provide for the common defense,' fortunately, has never been severely tested. But what has gone under the name of Defense has been very costly to the American people and since then has gotten them into seven major wars and a number of minor ones, none of which were more than remotely if at all in the interest of the common defense.

The fifth objective, to 'promote the general welfare,' has been an embarrassment to every political administration since the nation was founded. Practically nothing has been done to approach that objective, but a great deal of political effort has been expended to frustrate it. If you should call it to the attention of an American politician—of the type that usually gets elected—he probably wouldn't know what you were talking about. You would get some such answer as: 'General welfare,' what's that?' Or, 'The general is being taken care of by the army; he doesn't need welfare.' If he should comprehend the meaning of the term, particularly at this time, he would likely go into a hysterical frenzy, shouting 'communist,' 'subversive,' 'traitor,' 'infidel,' and a lot of other epithets.

The sixth and last stated objective, to 'secure the blessings of liberty to ourselves and our posterity,' is the vaguest, although the most righteous-sounding, principle of all. It requires further definition and is subject to a wide variety of interpretations. At present, 'liberty' means little more

than the right to worship fascism (alias democracy) and hate communism. With the aid of the interpretations contained in the Bill of Rights (the first major compromise among the humanitarians, political opportunists, and tyrants), the American citizen has the right, when he is hungry, to complain about it (provided he doesn't 'disturb the peace') but he is guaranteed no right to eat. His only real liberty of a positive nature comes through the possession of purchasing power and the free time to expend it in a manner which is satisfying to him. In the negative form, he has the liberty to drift along with the current of events and refrain from making any social decisions of significance. In practice, liberty is a rare luxury in American life, to be exercised freely by only a few, sparingly by most, and not at all by many.

Yet, we find that it is the Constitution of the United States—a vague and inadequate facility for attaining the goals of American life—that has become the object of worship, while the objectives stated in the Preamble are lost sight of. No wonder the United States is incapable of achieving responsible administration at home or comity with other nations.

One of the symbols worshipped by the American people (possibly because it appears on that real symbol of American life, the dollar bill) is the obverse side of the Great Seal of the United States. This is a fitting symbol, indeed. It depicts a hysterical bird of prey fluttering in space, with a heraldic shield plastered on its breast, a cluster of little arrows grasped in the claws of one foot and a twig from an alien tree in the other. Overhead, is a flock of scintillating stars embedded in a cloud, something like one might see when hit on the head with a brick. And the eagle has a ribbon caught in its beak, bearing a foreign inscription to the effect that he is only one of many.

When the President of the United States recently suggested that fifty billion dollars be spent by the federal government to build up the highways of the nation, did he state as the reason, or reasons, for this suggestion that the nation needs an integrated highway system to provide freer transportation for its people and materials, that the present hodge-podge of roadways is inadequate and haz-

ardous? No, of course not. That would not be in keeping with the modern pattern of diplomacy. He gave as the reason something to the effect that such expenditure would provide those with a high transportation priority greater facility for scurrying to and fro in case of an atomic attack by some enemy.

Militarism has become a Sacred Cow in America; and, if something can be defined in terms of military expediency, it would be sacrilegious if not downright treasonable to oppose it. Nevertheless, the President's suggestion ran into headlong collision with another Sacred Cow, States Rights. The States Rights Cow, it seems, is even more sacred than the military Cow. Among other things, it serves as a deceptive front for the political graft of the separate states; and the assembled governors of the states rebelled at the idea of the national politicians cutting in on their take. This example illustrates the general pattern of corruption of function that dominates American life under the Price System.

(Please do not misconstrue what we have said above as an attack on art as such. We have attacked only its misapplication in ways which corrupt function. We recognize that all people have artistic inclinations of one sort or another to some degree; and these inclinations demand expression. There is no basic reason why things of function cannot also be things of beauty and charm, nor any reason why social relations cannot be conducted graciously without loss of functional efficiency. But in these fields, art must be restrained and be made secondary to functional considerations; otherwise, as history proves, it is likely to 'go overboard' and do crazy things, often to the detriment of function.

(There are many areas and many ways in which art in its variety of forms can be applied without invading and corrupting the areas of function. For the most part, art is a boondoggle or hobby for those who obtain subjective satisfaction out of creating art-forms or admiring those created by others. What is art to one person may give another person the shudders; so there can be no universal standard or general criterion for 'good' art.)

North America is a natural social area. Surrounded by geogra-

phical barriers and possessing the essential requirements of land, climatic range, resources, and trained personnel, it could be operated as a self-sufficient and self-contained unit. With the progress made in science and technology during the past 300 years as a prime facility, the population of North America could, under functional direction, achieve the maximum results in the form of social and individual goals. Some of the attainable goals are these: Security from external invasion; internal tranquility; abundance of goods and services; freedom from toil, personal insecurity, and repression; a high standard of health and vitality; vast files of factual information in readily accessible form; and unprecedented opportunity for self development and expression. With these objectives in view, free from the corruption of art, commerce, bigshotitis, and traditional morality, a new social era could be instituted on this Continent in a very few years.

The major specifications for a functional social mechanism for the North American Continent have been worked out. This social mechanism has been given the name Technocracy. Day by day, as more and more energy is thrown into the social operations of this Continent, the need for the installation of this design becomes increasingly more urgent and more obvious. The fantastically corrupt and inefficient structure in use today cannot withstand these injections of new energy for long. Even now, it is being shaken to pieces. The patchwork of debt, wastage, charity, and wars that has been applied to hold it together for a little while longer is being strained beyond its strength. The political, business, and ecclesiastical clamor for more debt, more wastage, more relief, bigger wars, and more piety will resolve nothing and it only makes the situation more explosive.

The design for a functional operation and control of this Continent is at hand. The means of promulgating information about this design is here in the form of Technocracy Inc. — an organization of North American citizens who recognize the hazardous and incompetent nature of the present system and who are willing to seek a new and greater social order for North America. The Price System may have served a functional need in the era of scar-

city, but there is no place or use for it in an era of Abundance.

Technocracy is destined to become the most important advent this Continent has e v e r known, and it will soon be the most popular. Many Americans (perhaps you who are reading this among them) will turn to Technocracy through intellectual c o g i t a t i o n; the rest will be pushed into it by adversity, which inevitably must result from expanding the kilowatt load of the Continent beyond the capacity of its archaic and corrupted s o c i a l mechanism — the Price System. But, whether you walk in now or tumble in later, Technocracy awaits you.

—Wilton Ivie, CHQ

★ MONTREAL.—A top United States scientist publicly has flayed the 'blind and stupid anti-intellectualism' of the United States, and said he is shocked by effects of the McCarran-Walter Immigration Act and the treatment of nuclear physicist J. Robert Oppenheimer.

Prof. Edward C. Tolman of the University of California at Berkeley was applauded by normally sedate scientists at the International Psychological Congress when he made the remarks at the end of a technical paper on motivation and behavior.

'I wish to express my heartfelt thanks to Canada,' he led off, 'as one of the countries which in these difficult times has maintained its basic freedoms, for serving as host to this congress.

'As a citizen of the United States I am profoundly shocked that the McCarran-Walter Immigration Act has made the holdings of such a scientific congress as this almost impossible in the United States.

'I am profoundly disturbed at the attacks upon the probity and usefulness of scientists which are now going on in my own country.

'The case of J. Robert Oppenheimer is but an illustration of our blind and stupid anti-intellectualism which is undoubtedly going to have a most harmful effect upon scientific progress in the United States and upon the willingness of our scientists to work for their government.'

The international congress, jointly sponsored by the U.S. and Canadian Psychological Associations, is being attended by delegates from 29 countries including Russia.

—Canadian Press

★ LOS ANGELES.—Scientists at the University of California here say they have developed a supersonic hypodermic device which can shoot a hair-thin stream of liquid through four inches of tissue.

The instrument was developed by Dr. Benedict Cassen, Briane Dunne and Herbert Gass at the UCLA atomic energy project. This is the way the device works:

Liquid in a steel chamber is propelled through a .005-inch nozzle by the explosive action of a small wafer. The wafer is made of nitrosogunidine, a heat-sensitive chemical, and is detonated by a small soldering iron in the instrument.

—International News Service

Investigate McCarthy!

Columnist Barry Mather says that because of the suspiciously pro-Moscow developments during the McCarthy era, he favors a McCarthy probe of McCarthy. Mather notes that to many people Washington now makes stranger news than Moscow.

COMRADE McCarthy? McCarthy—is he a good Security Risk ?

I don't know, but have you noticed the suspiciously pro-Moscow developments during the McCarthy era ?

As a result of McCarthy's work:

(1) An American, McCarthy, has replaced a Russian, Malenkov, as the man most Britons dislike.

(2) The morale and the efficiency of the following Departments of American Government have been impaired: the State Department, the War Department, the Interior Department, the Labor Department.

(3) The English-speaking world is losing confidence in the American idea.

(4) An increasing number of people, noticing how American domestic politics more and more dominate American foreign policy, are taking a Second Look at American world leadership.

(5) A growing section of the population sympathizes with the victims of McCarthy persecution. . . . Some of the victims are probably left-wingers.

(6) Thousands of Canadians have lost confidence in the president of the United States.

(7) Sensing the 'phonyness' of the McCarthy line many here now

"Quick, Officer—
They Went That Way"

Reprinted from VANCOUVER SUN.

welcome better relations, such as trade, with China, Russia and the non-capitalist world.

(8) In McCarthyland itself, public opinion takes on a monolithic shape. Mum is increasingly the word. Liberty is more and more a thing to be put away and 'saved'. . . less something to be lived and enjoyed.

(9) To many, Washington now makes stranger news than Moscow.

(10) The Americans seem unable to do anything about it.

I make no charges against McCarthy.

I merely point to the suspicious things which have taken place during his office.

I would favor a McCarthy probe of McCarthy. **—Barry Mather**

★ WASHINGTON.—The Federation of American Scientists has called for an overhaul of the government's security system as an aftermath to the branding of Dr. J. Robert Oppenheimer as a security risk.

It urged President Eisenhower to appoint a board of responsible citizens to 'reform' the system and to order all government security officers to refuse to 'seriously entertain' any charge similar to one made against Dr. Oppenheimer.

This dealt with the allegation that Oppenheimer did not give the H-bomb project enthusiastic support.

The federation said in a statement that the present security program has 'disturbing and dangerous characteristics' and 'certain self-defeating features.' It said any program that rejects the services of men such as Oppenheimer 'ceases to serve its function properly.' *—British United Press*

★ SASKATOON.—Premier T. C. Douglas of Saskatchewan predicts a period of economic depression if Canada fails to adopt a program of social planning that will distribute growing surpluses to those who need them.

'We shall inevitably drift into a period of economic depression not because we have too little, but because we have too much,' he told the annual provincial CCF convention here.

Douglas said this country is already beset with growing surpluses, falling farm prices and increasing unemployment. He said capitalism had dealt effectively with the problem of production, but failed miserably to solve the problem of distribution. *—British United Press*

★ MONTREAL.—A union spokesman says thousands of jobs are going 'out the window' now that Canadian railways are switching to diesels.

Hardest hit are men who service locomotives in the shops, Harry Smith, president of division No. 4, Railway Employees Department (AFL), said in an interview.

'From our experience with United States railways—which are already dieselized —we know that 39% of our jobs will go out the window when the program is completed.' This would amount to some 7800 jobs. *—Canadian Press*

'Human Fertility: The Modern Dilemma'

Continental Headquarters of Technocracy Inc. reviews the book, Human Fertility: The Modern Dilemma, *written by Robert C. Cook and published by William Sloane Associates, New York. Uncontrolled fertility is bringing all humanity to the brink of disaster.*

ROBERT C. Cook is Director of the Population Research Bureau, Inc., 1507 M St., N.W., Washington 5, D.C., and publisher of the Population Bulletin. He is probably the foremost authority on population problems in the world. The Population Reference Bureau is not a government agency, hence is free from the restrictions, fears, and compulsions that politics and pressure groups would impose on such an agency.

The author says: 'Next to the atom bomb, the most ominous force in the world today is uncontrolled fertility.' (We think he over-rates the atomic bomb in this comparison.) 'Unbalanced and unchecked fertility is ravaging many lands like a hurricane or a tidal wave. . . The scramble for bare subsistence by hoards of hungry people is tearing the fertile earth from the hillsides, destroying forests, and plunging millions of human beings into utter misery.'

Yet, he points out, while the quantity is increasing, the quality is rapidly deteriorating; for, it is the lowest types of humanity that are breeding the fastest, while the superior types are not replacing themselves. This 'erosion' of human ability is particularly noticeable in Britain and the United States, and it comes at a time when these countries need superior intelligence and ability more than ever before. There was a time when only the toughest individuals could survive; now, with our science and our humanitarianism, we make it easy for the unfit to survive and multiply and, thereby, we are bringing all humanity to the brink of disaster.

The island of Puerto Rico is taken as a problem example on a small scale of a population that has outbred the means for its survival. It foreshadows the eventual fate of the whole world. When Columbus landed on Puerto Rico, the island was a 'tropical para-

dise' inhabited by a few Indians. Some of these were lucky enough to escape into the hills and survive the introduction of Spanish culture that followed; but, for the most part, the island became populated with the dregs of Spain and slaves from Africa. Under the brutality and ruthless exploitation of the Spanish noblemen and a medieval Church, the population became stabilized at the saturation point of about one million, living under one of the world's worst tropical slum conditions.

In the year 1898, the United States wrested Puerto Rico from Spain and proceeded to apply the benefits of health and sanitation and other humanitarian techniques. One of the world's most civilized nations, thus, set out to show the world what it could do for a limited, backward area and its miserable inhabitants. After a net loss of some one billion dollars to the American taxpayers and a half century of benevolent humanitarianism, Puerto Rico now has a population of 2.2 millions, living in utter poverty, debasement, and filth; and it is still held in a state of intolerable superstition by the same medieval Church, which continues to leach all it can get from the miserable incomes of its people. The area is not self-supporting. The luxuriant vegetation is gone; the birds sing no more; and many thousands of acres of once fertile soil are now eroded beyond use. Today, the birthrate of Puerto Rico is one of the highest in the world, with birth control fiendishly opposed by the Roman Catholic hierarchy and the American political machine. The only alleviation of this condition comes from Puerto Rico's ability to slop hundreds of thousands of its wretched, unwanted people into the slums of East Harlem, New York, where they add to, and make worse, the congestion and poverty of that already over-crowded and miserable district, and where they add appreciably to the crime problem of the city.

With Puerto Rico as its showcase example of humanitarian benevolence to a backward area, the United States now wants to take over the whole world and make it one huge 'Puerto Rico,' dedicated to 'freedom and justice under God.'

Three centuries ago, in 1650, there were about 450 million

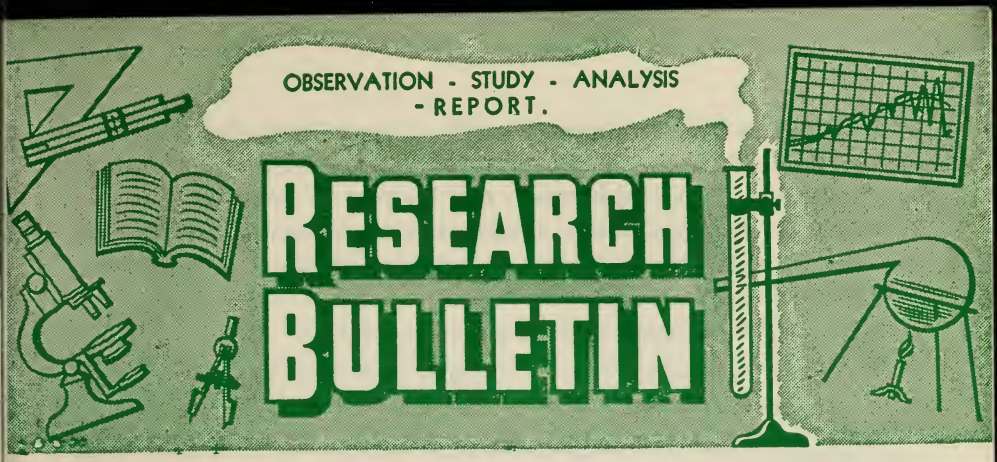
people on the earth. Of these, 250 million were in Asia, nearly 100 million in Europe, a similar number in Africa, and about 15 million on the rest of the earth. Before that, the general increase in population was slow. Although the birthrate was high, the hazards and miseries of life for the great majority were such that the deathrate nearly balanced the birthrate and, on occasion, exceeded it. Since 1650, there has been nearly a five-fold increase in the earth's human inhabitants, which now number over 2,400 million. And, at present, this population is registering a net increase of births over deaths of about 68,000 **per day.**

The most optimistic estimates of the earth's arable soil place the total at about four billion acres; but only a small part of this is highly productive and most of it is poorly handled. For food materials alone—enough to eat well—each person on the average requires two well-managed acres. There is not enough land on earth to feed the present population a healthful diet, with the result that two-thirds of the world's people are under-nourished. In the meantime, the fertility of the soil is being mined so wastefully that each year finds millions of acres less land available for food crops than the year before. Yet, the need each **month** is for an increase in area of farmland equal in size to the State of New Jersey.

When first invaded by Europeans, the American continents were sparsely populated. Under two different types of culture—the Spanish and the English—the population began to increase. Under the Spanish culture, the people were worked and exploited to the limits of human tolerance; and their wealth went abroad to enrich the Spanish grandees and the Church. A heavy toll in labor went into building grandiose religious structures. Life expectancy was short. The extremely harsh conditions of life, plus a high deathrate, as well as the celibacy preached by the Church, resulted in a rather slow rate of population growth in the countries under Spanish rule. It was after the overthrow of the Spanish rulers that the population growth accelerated in Latin America.

The population growth in North America, under the culture imported from England, was one of

(*Continued on page* 33)



AUGUST, 1954 *Compiled by Editorial staff* No. 98

Electronics for Tomorrow

ELECTRONICS: a word that holds more intrigue, magic and promise for the mind of modern man than Shangri-La or the Isles of Spice.

By the end of this century its four clipped syllables will have had a greater impact on the average imagination than steam and diesel together, possibly the atom itself.

Electronics can speak, memorize and calculate. It can see in the dark, hear in a tumult. It has reached the moon, and measured a virus.

The very wonder of it, even today, invades the commonplace.

'Pshaw. They can't fool me,' says the dainty old lady, bewitched by a shop window gimmick. 'They do it with electronics.'

Its crisp new terms sparkle in our vocabulary, language from an unknown frontier, like coaxial, ultra-high, microwave and a spate of 'onics' suffixes.

'It has sales appeal. If we advertise a product as electronic it's sure to move faster,' a promotion executive told me.

Today it prods our thinking. And tomorrow? Says the chief electronics engineer of one of Canada's great electrical companies: 'In the foreseeable future, electronics will be part of everything we do'

Basically, electronics has developed as a means of communication. But because it can pass information quickly, far and accurately, it can control and measure.

—Your TV and radio are pure communication.

—A radar set, which reports distance and direction, is communication plus measurement.

—An automatic homing missile is communication plus measurement plus control. These factors will change the pattern of your life.

By communication, control and measurement, electronics will adapt for you quantities of new power that Faraday, Newton and Kelvin hesitated to dream of.

Most of us won't be here to live in the visionary's automatic home, humming with electronic butlers. But our children will.

In your own lifetime you may be able to pick up a phone and dial directly any number in any city in North America or even overseas.

Your TV picture tube of the future may be just that: a flat, portrait-size frame to hang wherever you wish on your wall. 'Today's TV sets take up entirely too much room,' say the engineers.

The electronic air conditioner—fully automatic, noiseless, non-wearing—is not far over the horizon.

Cost abolished, electronics could take over much of the physical drudgery and routine thinking you undergo every day.

Electronics doesn't get bored, seldom makes mistakes.

Electronics automation in industry will shorten the work week.

In laboratories scattered through North America and Europe, linguists and scientists are teaching electronic circuits grammar, syntax and spelling.

When they're finished they hope to have a practical translating machine, into which an operator will type a sentence in one language, out of which will come an adequate translation in another.

Once such a system has been developed, can the scientists turn

the circuits to work in your office as an electronic steno? Possible and probable, in time.

An executive will dictate his letter directly into the steno machine, which will punctuate and type it in a few seconds. If each junior executive had a tape recorder, one electronic steno could serve an entire head office.

The famous electronic computers, the electrical brains that make headlines every month or so, can do the work of an entire accounting staff in a fraction of the time. But they cost plenty.

We can expect, therefore, inside a year or two to have 'brain' pools operating in industrialized Canadian areas. On a rental basis, your office can tie in on the computer's services via cable or radio signal.

One of the most imagination-stirring developments of mid-century electronics has been the closed circuit television system.

An unhuman eye . . . with all its potentialities.

An eye that can go inside a furnace, or within a few inches of molten steel.

An eye, or set of eyes, that can watch unblinking a vast area 24 hours a day, seven days a week.

An eye that can transmit its visual message hundreds of miles, or 50 feet, at the speed of light.

Small closed circuit TV cameras, transmitters and receivers are in production today. The camera itself is small enough to tuck in a suitcase, or in a hidden recess as a burglar alarm.

In Winnipeg last year a group of businessmen gathered in a hotel ballroom to watch a TV screen. It wasn't entertainment; it was a closed circuit telecast from a major business convention in the U. S.

The operating rooms at the Hospital for Sick Children in Toronto have built-in TV cables, for telecasting surgical miracles to medical students.

Professors at the University of Toronto, doing research on educational communication, opened a series of experiments not many months ago.

Their first public test indicated that TV appeared to be a better

educational medium than radio or reading. Subsequent tests will assess the comparative value of films, spoken lectures and printed pictures.

The impact of TV on the classroom will be tremendous. For example, the researchers found in their comparative tests that although TV seems to pass basic information more efficiently it does not make for good spelling.

In fact, students lectured by TV tended toward phonetic spelling, words like 'granted' emerged 'graned.'

Wired TV could work a minor revolution in a field as commonplace as the elevator service in your office building.

When you press the call button, the despatcher or operator knows only that at least one person wants a ride, up or down. A TV camera, focused on the waiting area, could tell him how many. The despatcher could send more cars.

'A TV camera sited in the roof of an elevator car and wired to a screen in the lobby will stop a lot of shenanigans,' predicts the chief engineer of the world's largest elevator company.

Canada Post Office may install TV watchdog systems, replacing deep holes, in its postal sorting rooms to discourage pilfering.

The list of jobs for this mighty eye could fill, by stretching the imagination, all the columns of this Digest.

In the field of public safety, electronics will change many facets of our lives.

Electronic scientists are developing an accident-resistant highway, for use by accident-resistant cars.

They plan to bury an electronic transmitter under the highway itself, pulsing out guiding beams to the vehicles above. A receiver in your car, coupled to the automatic steering, will literally hold the car in its proper lane.

A small radar set in the car itself could prevent you from colliding with another car in the same lane.

'It's possible, though hardly practical, to build a car so that you could climb in, drive to the nearest superhighway and sleep until the

highway woke you up before your destination,' an electronics executive says.

Radar-controlled intersections, measuring the traffic flow, could speed up movement in our congested cities.

Electronic aids to motoring are in their infancy, and the first is the much-promoted 'electronic eye' that sees the headlights of an oncoming vehicle and automatically dims your own.

Despite the advances in aviation since the last war, the brute, elemental force of the weather still masters the air.

What could illustrate this better than the sight of a great international airport hushed and depressed under a blanket of pea soup fog?

Electronics will enable truly safe all-weather flying in the future. In fact, some day the pilot of a huge commercial jetplane may fly his ship along electronic 'rails,' much like a railroad motorman.

Two aircraft collided over Moose Jaw not long ago, killing everyone aboard both planes. Our airlanes, believe it or not, are getting crowded enough in their very infancy to warrant strict traffic control.

Air-to-air radar soon must evolve from military to peacetime purposes. Air-to-ground radar is a fait-accompli today.

Three quarters of the area of our planet lies under water and these hidden jungles and mountains are as mysterious to man today as they were 5,000 years ago.

Man's explorations, though barely started, have been brought up short by the crushing power of water pressure. But an electronic beam, generated by the fathometer and other instruments, travels to the depths and back with ease.

Electronics already has discovered a mysterious layer of density hovering many fathoms below the surface and sometimes miles above the bottom.

What is it? Fish? Or some nutrient algae, unlimited in quantity, which could feed all mankind forever?

Oceanologists carry on their electronic explorations.

Sadly, electronics has its limitations.

The most solid limitation of all is the invisible spectrum of frequencies, the pathway of electronic waves. As far as science can

see now, there just aren't enough frequencies to do everything man asks of electronics.

We quite possibly could run short on frequencies. Science today works for conservation more seriously than our governments guard our forests.

The spectrum of frequencies, which Canada shares with the whole world, is certainly among our most valuable known natural gifts.

But whatever current problems, there can be no doubt that the mechanics of living and working 50 or even 20 years hence will make our current push-button age look primitive indeed.

—Robert Perry in The Financial Post

The Automatic Factory

THE revolution in the factory is already well under way. Factories that practically run themselves are becoming almost a commonplace, not only in chemicals and communications but running across the entire spectrum of industry.

In some canning factories, sheet metal for cans, cardboard for containers and food to be canned are fed into separate parts of an automatic machine, which makes the cans, fills them with food, seals and labels them and deposits them at the other end, neatly packed in a sealed cardboard box which it has also made.

'Television and radio sub-assemblies are now being made automatically,' John Kord Lakemann wrote in **Steelways** (June 1953), 'as are light bulbs, glassware, chocolate and beer.'

Chrysler's Firepower V-8 engine is put together automatically, and Chrysler has two automatic crankshaft forging lines. Ford, one of the pioneers in automation—as the process of making a factory automatic is coming to be called—has an automatic engine plant in Cleveland, an automatic plant for body parts in Buffalo and eleven automatic production lines in its main plant at Dearborn.

The atomic energy industry, according to Gerard Piel, is 'criti-

cally dependent' on automatic control; it uses robots in nuclear reactors to control 'the dreadful flux of atomic particles in which no living thing could survive.'

But this is only the beginning. One survey reckons that more than a dozen industries, in such diverse fields as food processing, textiles, machinery and packaging, are ripe for automation. And in the not far distant future, many experts believe, more and more will become ripe.

'Talk of the automatic factory isn't like talk about taking off in rockets to the moon,' Wiener has said. 'It's here with us now, and we have to face up to it.'

What will the new factory be like? One certainly is that there will be far fewer men involved in the actual production process. In fact, ideally, there will be no men.

'Nowhere is modern man more obsolete than on the factory production floor,' E. W. Leaver and J. J. Brown wrote in **Fortune** as long ago as 1946. '. . . already we have machines that see better than eyes, calculate more reliably than brains, communicate faster and farther than the voice, record more accurately than memory and act faster and better than hands . . . In every department of nonemotional thinking, planning and doing, machines can be built that are superior to workers on the same job.'

Once the workers are cleared off the floor, a factory can run around the clock and around the calendar if we want it to, since the machines will never get tired. And plants which must be designed around human limitations, as even the most automatic of present plants are, are not necessarily—in fact, probably aren't—the most efficient.

Instead of letting men read the control instruments and take charge in emergencies, a completely automatic factory will turn the job over to a digital computer. Properly hooked up to all the other control instruments and automatic inspection devices in a factory, it can be programmed to cope with emergencies 'precisely as would a well-instructed human operator' and to react to them 'at least a thousand times faster.'

These developments lead to possibilities that are as yet no more than dreamed of. For example, the chemical industry may be completely revolutionized if, as some chemists believe, valuable new products can be produced in a chemical plant that will interrupt split-second chemical reactions midway to completion. These plants, where gasses will flow at supersonic speeds and reactions will take place microseconds—millionths of a second—can only be run by machines for, as Ridenour has put it, 'Reactions occurring in microseconds must be controlled by machines that can respond in microseconds. Men will design these machines, build them and give them instructions, but men will never be able to compete with their performance.'

In the end, whole industrial complexes might be mechanized. 'Ideally,' writes the **Economist's** correspondent, the process of automation 'should reach the point where a self-controlled shovel will bite into a hill of iron ore at the start of an automatic process, while fully equipped motor cars pour out at the end,' at which point automation in distribution would take over. **—Platform**

Brainy Furnace

LEEDS & NORTHRUP CO. has developed an electric furnace that measures and controls the carbon content of the steel it's processing through all stages of its operation. This means that you can form intricate component from easy-to-handle low carbon steel, then put them in the furnace to toughen up.

So far, the furnace has been used to turn out small, hard steel parts for such equipment as business machines, cameras, rifles, and sewing machines. Usually, these parts have to be forged, then machined. And frequently this machining is difficult and expensive. Sometimes it's impossible, especially if the part is particularly intricate—with lots of small precision holes, severe bends or ridges. When you come up against such a part, you have to make it in sections. This adds assembly costs to the high machining costs.

Leeds & Northrup says that its new furnace greatly reduces this machining and assembly time. Sometimes it eliminates the time altogether.

High-quality steel is dependent upon its carbon content. The more exact the control of carbon during the heat-treatment process, the better the product that's turned out. L & N's furnace has a little gadget called a carbohm built inside it. The carbohm measures and controls the amount of carbon in the atmosphere of the furnace. It is made of an alloy steel, and it reacts to the furnace atmosphere just as the steel that's being heat-treated does.

When the carbohm is exposed to carbon at heat-treating temperatures—1,450 F to 1,750 F—it does one of two things. If there is more carbon in the atmosphere than there should be, it absorbs carbon. This increases its electrical resistance. If there is less carbon than there should be, it gives away carbon to the atmosphere. This decreases its electrical resistance. A control device is hooked up with the carbohm; when the control sees a change in resistance—either up or down—it knows whether to put more carbon in the furnace's atmosphere or to take some out.

The L & N furnace also controls the cooling of parts that are being heat-treated. With older methods of cooling, you have to transfer each part through an uncontrolled atmosphere to an outside quench tank. In doing so, you run the risk of changing the metal's physical properties. To get around this, L & N has built its quench tank right into the furnace; the parts are not exposed to uncontrolled atmosphere until the whole operation is finished.

A firearms manufacturer—L & N's first customer—has put the furnace to work turning out action bar locks for shotguns. These locks used to be forged and machined from high carbon steel stock. They were expensive to produce this way, so the company tried to turn out the part by press-forming it. That didn't work, because it ruined a new set of dies every few days.

The company next decided to try a new metallurgical approach: forming the part from low carbon steel, then replacing the carbon to get maximum hardness. This process took 17 hours, not bad by pre-

vious standards. But there was no satisfactory way to control the operation so that the results would be consistently good. Rejects ran as high as 90%.

When the company tried out the L & N furnace, it found that it could produce the part it wanted in four hours, save a lot on rejects and inspection time.

L & N says that International Business Machines Corp. has put one of the furnaces to work to heat-treat a small part for its electric typewriter. The part has three right-angle bends in it, and it has to be able to stand up under impact and friction. This gave I B M the same sort of problem that the firearms manufacturer had. The part kept breaking during production.

Then one of IBM's engineers heard about the L & N furnace. A test batch of the problem part was put through one of L & N's furnaces in Philadelphia. It came out well, so IBM plunked down $13,000 for a furnace of its own. Now it's using the furnace in its plant at Poughkeepsie, N.Y. **—Business Week**

★ NEW YORK.—An electronic robot named Audrey that can recognize spoken numbers and flash them on a lighted panel has been developed by Bell telephone laboratories.

It is a step toward a machine to translate the human voice directly into the printed word.

The device, as now rigged up, flashes the proper colored light to show which number it has just heard through an ordinary telephone handset. But it could equally well be connected to print the number, or operate a dial mechanism.

Thus you tell Audrey what number you wanted to call, and Audrey would dial it for you.

Ultimately, it is hoped to extend Audrey's vocabulary to include additional sounds —words other than numbers. And, say Bell scientists, it might even be taught to say a few words on command—and in its own voice rather than a phonograph-like reproduction of the human voice it had just heard. So far, though, Audrey can recognize only single-digit numbers from zero through nine.

The name Audrey is a contraction of the machine's official description—automatic digit recognizer. *—Associated Press*

★ SAN FRANCISCO.—Use of atomic power to provide electricity for American homes in about three years was predicted here recently by A. C. Monteith, vice-president in charge of engineering and research for the Westinghouse Electric Corp.

Monteith said the Duquesne light company in Pittsburgh, Pa., is building a huge new plant to use an atomic reactor under construction by Westinghouse.

In the fall of 1957, he said, electric power will start flowing from the plant to Pittsburgh homes. *—International News Service*

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

AN ELECTRONIC MULTIPLIER that works from punch cards, checks its own accuracy without slowing down, has been announced by Underwood Corp., New York. The machine processes information at the rate of 7200 cards an hour despite the complexity of any calculation.

A GIANT COAL STRIPPING SHOVEL — as high as a 12-storey building — is being constructed by Marion Power Shovel Co., Marion, Ohio, to dig coal seams in western Pennsylvania. It will be 50% larger than any existing equipment of its kind and will cost $2,500,000.

A NEW MACHINE HAS BEEN introduced by National Acme Co., Cleveland, that may bring the turret lathe one step closer to automatic operations. Its 12-inch Universal Model MC single-spindle chucking machine performs ten machining operations without stopping. Thus, no time is lost from the start of the machining sequence until the operator unloads the finished piece.

MAGNETIC 'MEMORIES' WHICH raise the speed and reliability of high-speed automatic computers, have been developed at Massachusetts Institute of Technology. One such unit can store a piece of information in less than eight-millionths of a second, and can give it back to the machine again just as fast.

AN ELECTRON MICROSCOPE, SAID to be twice as powerful as any in use today, was displayed recently at the United Nations, New York, by the Radio Corp. of America. It will permit study of particles smaller than one 10-millionth of an inch in diameter. The microscope will be used by the Karolinska Institute of Stockholm, Sweden.

A NEW PROCESS FOR REFINING beryllium and other metals from ore has been developed by Light Metals Refining Corp., New York.

The process uses a powerful electric arc at a temperature of 15,000 F. to refine the metal. The company says the process can reduce the cost of producing the metal by 75%.

A DEVICE THAT USES ULTRA-high-frequency sound waves to spot defects in engine components has been developed by Sperry Products Inc., Danbury, Conn. One of the devices is now being used by the Allison Division of General Motors Corp. to test rotor forgings and other jet engine parts. Sperry

calls the device SIMAC (sonic inspection measurement and control).

Roughly, the instrument works like this: The part that is being inspected is mounted on a rotating table which is immersed in water. SIMAC shoots ultrasonic waves into the part. If there are defects, waves are reflected back and recorded on a circular chart. Inspection takes about 15 minutes per part.

The company claims SIMAC is the first precision instrument that simultaneously applies ultrasonics and automation techniques to parts inspection on the production line.

CAMSHAFTS FOR CARS CAN BE produced automatically on a new machine started by Seneca Falls Machine Co., Seneca Falls, N. Y. The machine is composed of two lathes coupled with automation equipment, which tools and unloads the lathes and transfers the camshafts from one lathe to the other. It can turn out 112 shafts per hour.

AN X-RAY MICROSCOPE THAT looks inside magnified specimens, and thus has possibilities as an aid in the development of new alloys, has been developed at General Electric Co.'s engineering lab at Schenectady. It magnifies up to 1500 diameters.

A SOUND RECORDER THAT REGisters four conversations at the same time on a single piece of tape, unscrambles them to play back individually, has been announced by Magnecord, Inc., Chicago.

A LOW-COST CORN PICKER, WHICH can be hooked into the combine the farmer uses for harvesting wheat, is under test now at the University of Illinois. The machine shells each ear as it is being harvested, and is said to be safer, more efficient, and more economical than anything on the market.

AN ULTRASONIC INSPECTOR OF metal parts that follows instructions recorded on magnetic tape has been put into operation by Sperry Products at General Motors Allison Division. Like a doctor with a stethoscope, 'Simac' looks for defects in rotor forgings by automatically moving to specified checkpoints and 'listening' to the metal.

A SWIMMING POOL ALARM THAT rings a loud bell when somebody accidentally falls in has been put on sale by Los Angeles' Modern Design Engineers. A sensitive float connected to an electric box at poolside is upset by an unusual motion of the water, thereby sets off the bell, which keeps ringing until help comes.

A PORTABLE ELECTRIC GENERAtor that can be installed on a tractor or truck to operate off the engine has been brought out by International Harvester in conjunction with General Electric. 'Electrall' will furnish electricity for power tools, insect sprays, paint guns, hay balers, pumps, emergency light and heat.

A MAGIC EYE FOR PIPELINES HAS been developed by Gulf Oil's research labs in Pittsburgh. With it, you can look into a line, tell what is passing through at any given moment.

(*Continued from page* 20)

the most spectacular in history. Families were large; most of the produce remained here to nourish new expansion; and there was not the wasteful diversion of effort and wealth into building religious edifices. Up to the time of the War Between the States, the population doubled every 23 years in spite of the high deathrate. At first, most of the population was rural and the general expansion was westward. But, later, the biggest migrations were to the cities. After the 'Civil War,' there was a gradual decline in the rate of population increase in the United State; until, at the present rate, it would take about fifty years to double the number of people from natural increase. The rural areas produce an excess of people, which pour into the large cities, where, for the most part, the population does not replace itself.

China is an area where the population has reached the saturation level. Millions of Chinese are doomed to famine; and the big problem of the medical profession there is not to save lives but to prevent births. Any effort to relieve famine or disease in China, without first controlling the population numbers, merely adds to the disaster potential of that area. The same is true for India.

The challenge to modern man is finding an effective means of reducing the birthrate to keep pace with the deathrate. In the past, any attempt to introduce contraceptive techniques, particularly among the 'lower classes,' met with determined opposition. In England and the United States, contraception has been quite effective in reducing births, particularly among the more intelligent levels, in spite of restrictive legislation and public disapproval; although death control has nullified much of this progress in so far as total numbers are concerned. Sweden, likewise, has shown remarkable progress in stabilizing its population.

Ireland is a country which keeps its population within bounds by severely repressive means. In the last century, Ireland has reduced its population to about one-half of what it was at its worst. Late marriages and few marriages, largely as a result of economic restrictions developing spontaneously in the country, account for most of it; although the great potato famine of the mid-Nineteenth

Century, resulting in millions of deaths and migrations, gave it a substantial impetus. Both the Roman Catholic Church and the Irish statesmen are dismayed, and attempt to encourage large families; but the social mores and the economic factor veto these attempts. The life of the individual Irishman is cruelly repressed, but the country as a whole is much better off than the 'squalid, starving mire it had become by 1820.'

Although the birth rate in Italy has declined in recent decades, the decline in the deathrate has been even faster, with the result that, in relation to its progress, Italy is one of the most over-populated countries on earth; and the net increase is at the rate of half a million a year.

With the introduction into Europe of the Arabian numerals and the formulation of the scientific method, although against the fanatical resistance of the medieval Church of Rome, a new era of discovery and invention was born; and, in spite of the Inquisition, Europe did emerge from that historical slum, the Dark Ages of Catholicism. Established authority — Christian, Mohammedan, and Hebrew—opposed all forms of progress, fighting doggedly for the status quo of superstition, disease and human wretchedness. But, at every turn, Authority was proven in error as science made one advance after another.

The way of the early scientists was slow and dangerous. Centuries were required to make even minor gains, while death or imprisonment was the usual 'reward' of the individual scientist. The secrets of disease were slowly uncovered through the work of such people as Jenner, Lister, Pasteur, and Koch; and the superstitious explanations offered by Authority were discredited, one by one. Many more babies were saved from early death and the average length of life was extended. But death control accelerated the process of population growth; and, in its own way, this has developed into a more dangerous problem than that of uncontrolled disease Now, however, man knows what to do. But intrenched Authority is again fighting social progress, seeking to inflict upon mankind the futile suffering and sordid hardship of extreme over-population.

People, both ignorant and educated, dread and loathe a new

idea. One of their greatest shocks came with the publication in 1859 of Darwin's first book on evolution. 'That human beings are part of the great family of life, which includes the mouse and the cabbage, is still a shocking idea to many people.' Progress in scientific knowledge — the only knowledge that has any validity—comes from seeing, not what one is told to see, but what actually exists. That Authority is still more readily accepted than science by great numbers of people in low and high places is revealed in such legislation as Tennessee's anti-evolution law and similar legislation in other states. But, to those with adaptive intellects, science is slowly and surely bringing ever closer together human concepts and the world of reality.

The multitudes, as well as most intellectuals, never make any appreciable departures in their concepts from the indoctrinated patterns of their youth. Few people ever accept voluntarily during their lifetime any major change of concept; and most of these can accept no more than one such change — rejection of religious faith, major change of religions, significant shift of basic political ideas, or some basic concept regarding society. Many people, it is true, are forced into changes of behavior usually against their wills, which, eventually, they adjust to and appear to accept; but we cannot regard these as changes of concepts as such.

By means of the scientific method and a few imaginative and adventurous investigators, among them Gregor Mendel and Thomas Hunt Morgan, the basic principles of heredity have been discovered and made known. The same principles are found to apply to garden peas, fruit flies, sweet corn, milk cows, and human beings. Thus, it is now known that the chief differences between races, types, and individuals of mankind are inherited from their ancestors; and many details of how these differences are inherited are known. It has been discovered what is back of some cows' giving more milk than others under similar conditions of environment and feed. Likewise, it is known what causes some people to have different colored skins from others; what permits some people to develop more intelligence than others; how human defects are passed on from one gen-

eration to another, and how certain of these defects may skip one or more generations before showing up again.

Through the discoveries of science, it is known definitely that people of superior intellects and abilities tend to have offspring who are superior in the same characteristics; and that people with inferior intellects and abilities tend to produce offspring who are similarly inferior. It has also been demonstrated that, particularly among the Anglo-Saxons at present, the superior categories do not replace themselves, while the inferior categories breed most prolifically. As a consequence, the general intelligence of Britain, the United States, and Canada has been declining rapidly during recent decades. The trouble that these areas encounter in their social affairs, consequently, are not due entirely to the nature of the problems that arise; but, in a large measure, to the lower intelligence of the people who must face those problems.

The Latin stocks of Europe wiped out their higher intelligence many years ago with their Inquisitions, and precious little in the way of genius has arisen since, either in the areas of Europe which they occupy or among their descendants in other areas.

The great populations of Asia —whose superior intelligence has been held in a latent state by lack of education and social opportunity to express itself, and which have not suffered the effects of Inquisitions and down-breeding like the people of the West—certainly are capable of displaying a much higher general average intelligence than is now exhibited in North America, if provided opportunities to develop it. Their intelligence (like their petroleum) has not been squandered recklessly, and it (like the petroleum) is still there for future development. But, once intelligence has been bred out of a race, there is no way of recovering it short of long-term selective breeding, if even then; and that, of course, is 'unthinkable' in a 'democracy.' No amount of education, training, indoctrination, or acquisition of gadgets can make a genius out of a 'normal' individual, much less out of a moron. If it isn't in the chromosomes, it isn't to be.

The question of the relative influence of environment and heredity on the growth and character

of people comes in for an extended discussion in the book; but we do not consider it a matter that should be made into an issue. Any discussion of the subject would have to be within defined limits in both factors. Differences in the chromosomes can produce differences in organisms as extreme as an elephant and an ameba, bread mold and human beings. Differences in human heredity can produce all variations between stillbirths and geniuses. Differences in the environment can provide, among other variations, healthful life or slow or sudden death. For instance, human life can survive only within a temperature range of less than 100 degrees Fahrenheit. Below freezing or above 100 degrees Fahrenheit, the human must be protected by artificial temperature regulating devices (except for brief periods of exposure). Fifty degrees above or below this range and life becomes impossible to maintain. One must have water, oxygen, and food — all environmental factors—to stay alive at all. In many instances, very minute differences in the chemical intake of the body may make all the difference between a healthful normal life and idiocy or death. We need only mention the words 'infection' and 'infestation' to indicate that other environmental factors have potent influences on one's survival and quality of life. But, even as in animal breeding, it takes high quality parents to produce high quality offspring; and scrub parents usually produce scrub offspring. Rare exceptions may occur in both directions, but these, too, are understood and explainable by science.

If one sets out to raise pigs, he is expected to have at least a college education to do the job right. But to raise children, it isn't supposed that one needs to know anything, and few even appreciate that there is anything to learn.

It is recognized that those who advance highest educationally and economically are generally superior in intelligence to those who fail to make such advancement. But statistics show that the higher educational and economic levels do not replace themselves, while the lowest educational and economic levels—those people living in rural and urban slums — are more than doubling their numbers each generation. Without specify-

ing the factors involved, Cook states it this way:

'Economic and educational success works eugenic miracles in reverse in an industrial society. The price for success is a slow, steady, remorseless biological extinction. Those who move up the ladder are, in effect, fractionally sterilized, in direct ratio to the degree of success they achieve. In terms of maximum fertility, graduation from high school is followed in the United States by a process equivalent to a 50 percent reproduction sterilization. Graduation from college has the effect of removing, as though with laboratory precision, 75 percent of the fertility present when the education process began.

'The question as to who is going to inherit the United States is not a popular question to ask. There appears to be a general pretense that no crisis exists. Congress, its collective mind generally focused on getting votes, does not debate the matter in terms of national interest. The churches are largely silent on the topic, and to many of the leaders in the fields of medicine, education, and public health the subject is still anathema.

'The raw materials exist by which to appraise the genetic and cultural trend that the 1940 census confirmed. Numerous bureaus in Washington pile up statistics, which, if they were read, would shake the reader like the handwriting on the wall. . .'

In America and Britain, it has been evident for some time that each new generation contained only half of the higher intelligence that was present in the preceding generation and double the feeble-mindedness. These nations are fast becoming nations of nitwits; and the general behavior of the public indicates that a great many of them have already 'arrived.' Despite its miserable low state, the general average intelligence of Britain probably is higher than that of the United States. This is because large segments of the British populations have not had many opportunities to become successful like their American cousins, hence, the intelligence of these groups has remained submerged and not become elevated into the categories where high sterility goes hand in hand with Success.

With machines replacing human muscles as well as the human

brain in some classifications of work, the social need for masses of low-intellect workers is disappearing. The complexities of modern civilization call for many functional people of high intelligence. The need is not being met; rather, those capable of operating the social mechanism of modern society are becoming fewer and those who are of no special benefit to society are multiplying like rabbits. The day of national disaster is closer at hand than anyone cares to think about. (When a scurrilous fascist stooge can cower most of the people in a great nation, including most of its leaders, by his bullying tactics, it is evident that that nation is nearly due for disintegration on the biological front.)

Agencies of the United Nations and the United States have gone forth with various sanitation and hygiene applications to reduce the death rate in many lands, but have scrupulously evaded any policy or practice of birth control to match the death control. Such 'good intentions' can lead only to increased misery and starvation. This is most evident in those places where the population is at the saturation level already; for instance, Japan, Haiti, Puerto Rico, China, India, Ceylon. The Occupation in Japan, under General MacArthur, instituted widespread death control and health improvement programs; but, yielding sympathetically to Catholic pressures, carefully refrained from recognizing any responsibility or interest in birth control. Japan faces a hopeless future.

The need of the world is for some simple, easily available, and temporarily effective means of conception control, according to Cook. He spurns any suggestion, such as that of Josue de Castro, that the way to control the population is to increase the standard of living above the level at which people tend to over-produce babies. He considers this approach as unrealistic, both from the time factor and available world resources. He thinks that for less than the cost of a warship, a pill as cheap as an aspirin could be developed, which when taken orally would harmlessly produce temporary sterilization. (Of course, the ideal conception control technique would involve the use of some inexpensive chemical which could be given to the population 'wholesale,' such

as placing it in the public drinking water, and which would render everyone sterile for specific periods of time, without depending on the will and application of the individual.)

In the concluding chapter, Cook attempts to find an answer to the problem of overpopulation, but he is not able to come up with any ready-made solution. In appraising the problem of finding the answer, he says: 'The crisis in human fertility is worldwide. It is everywhere composed of the two great basic aspects of the population question: How many people? and What kind of people?' He sees little hope of direct action from government, business, or religious leaders. In most countries, these agencies tend to demand more people, not less, and turn their heads when confronted with the question, What kind of people? The political leaders want more people because they represent more votes, more taxes, and more soldiers. The businessman wants more people, on the assumption that an increasing population means more customers, more sales, and more profits. (The American businessman, today, is licking his lips over reports that there are 7000 more mouths to feed in the United States each day than there were the day before.) The ecclesiastic merely sees more souls to save and more tithes to collect as the population increases; so he is opposed to doing anything to reduce numbers.

Cook thinks that the initiative must come from the people themselves; that, given the knowledge, a few courageous spokesmen to incite them to action, and an opportunity, the people themselves will force their governments to act in their behalf. No women in the world want to be mere broodsows if they know any way to avoid it. To illustrate his contention, Cook mentions an event in Puerto Rico: In that miserable island, the women discovered that the 'approved' methods of birth control which the Catholic Church permitted were ineffective. When a few of the more well-to-do women started utilizing the services of a birth control clinic, the Church issued a pastoral letter to be read in all churches condemning the clinic. It was the first information that most Puerto Ricans had received that such services was available; and, soon, the clinic was swamped with demands

for information about the practices which the Bishop had denounced. In Puerto Rico, some 60% of all women who have their children in hospitals request sterilization for themselves.

Cook feels that, if the people become conscious of the need for, and have an opportunity to practice, birth control, they will override tradition and church opposition and make it a topic for public discussion, with the result that the governments will be compelled to respect their wishes.

The tragic part of leaving the practice of birth control to the will and initiative of the individuals is that the more intelligent people will make the most use of it, while the less intelligent will most neglect it. But, it is hoped, that once birth control becomes accepted and popularized, it will filter down to even the lowest levels. It may even become socially mandatory for those people who are least significant and most burdensome to their society. Cook regrets that the lever of population control has no better fulcrum than this on which to rest. But, with a few bold and dynamic leaders in the field, we may yet be able to save the human race from catastrophe. If we fail to recognize the problem, it may happen, 'there will one day be none of us left, not even any to bury the dead.' **—CHQ, Technocracy Inc.**

★ HAMILTON.—The present trend of unemployment indicates that by next winter the situation will be considerably worse than in the past winter, President George Hees of the National Progressive Conservative Association said here.

Hees said unemployment figures for February, March and April showed that the unemployment situation this year, compared with 1953, was steadily growing worse.

'If the situation compared to a year ago continues to grow worse at its present rate of deterioration, or even if the number of unemployed persons continues to be 80% greater than a year ago, then by next winter there will be considerably more than half a million unemployed people in Canada.

'That will be 10% of our working force, and will be a very serious situation indeed,' he told the Hamilton Center Progressive Conservative Association.

—British United Press

★ WASHINGTON.—The U.S. Atomic Energy Commission has announced approval of a $10,000,000 project designed as a step toward the perfection of a central station which can produce cheap electric power from an atomic furnace.

AEC chairman Lewis L. Strauss said that the project will consist of developing and constructing the country's first sodium-graphite reactor. The AEC and North American Aviation, Inc., of Los Angeles, will do the work jointly. *—Associated Press*

Watch That Word!

'. . . the government would rather people didn't talk about unemployment.'

—from an article in Maclean's

A WEEK after Fred Worp was fired from his job as a widget scraper, Fred went down to the unemployment office.

He entered the building and went up to the attractive receptionist.

'This here the unemployment office?' asked Fred.

'No, indeed,' smiled the receptionist. 'It's the Employment Office. What did you wish?'

'I'm out of work,' said Fred, 'I . . .'

'You mean you're **between jobs,**' said the receptionist sharply.

'Yeah,' said Fred.

The receptionist took Fred's name and said:

'Is this the first time you've been made available for another position, Mr. Worp?'

'Eh?' said Fred.

'You've been employed steadily for some time?'

'Oh, sure. I been a widget scraper since 1941. The market just dried up, is all.'

'I see.' The receptionist stamped a card and handed it to Fred, saying:

'Now if you'll go to Room 105 and sit down, the Supervisor of Silence will see you in a few minutes.'

A couple of hours later Fred was called into an office and waved into a chair by a large man behind a desk. The large man took Fred's card and, flashing a synthetic smile, said:

'Well, now, Mr. Worp, what seems to be the trouble?'

'I got canned,' said Fred.

An elaborate wince contorted the Supervisor's face.

'Please, Mr. Worp,' he said, 'do be careful in your choice of words. I'm sure what you mean is you've been freed from uncongenial work.'

'Uncongenial?' said Fred.

'Certainly. A man of your cal-

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ibre shouldn't be wasting his life scraping widgets.'

Fred's balding brow pleated into slow surprise.

'All I ever done is scrape widgets,' he said. 'And now I'm unemployed.'

The Supervisor sprang to his feet and struck his desk with a fat palm.

'You must not use that word,' he shouted. Calming quickly, he sat down and said: 'That kind of talk can ruin our whole economy, Worp. Canada is counting on you to keep mum.'

'Mum is counting on it too,' said Fred. 'Also five kids, a rabbit, a—"

'Never mind that. Sooner or later the market for widgets will come back. In the meantime we have nothing for you. But the important thing is that you mustn't go around telling people you're unemployed.'

'What'll I tell 'em?'

'You have a choice of several explanations for not working.' The Supervisor handed Fred a mimeographed form. 'There is the list. For a man your age we recommend The Early Retirement. You tell people a wealthy uncle died and left you a potfull.'

Fred shook his head thoughtfully.

'I don't like that. Too many fellas die soon as they retire.'

'Then what about The Happy Hobo?' urged the Supervisor. 'We supply the tramp custume and give you a pass for all CNR freight trains.'

'Mm, I ain't much of a one for travel,' said Fred. 'I stick pretty close to home.'

'Perfect!' cried the Supervisor. 'In that case you'll adopt Explanation C—Sudden Death.'

'Death?' said Fred.

"You just keep to your house, Mr. Worp,' said the Supervisor, guiding Fred to the door. 'We'll phone you when we have something for you. And remember, dulci et decorum, est pro patria mori.'

That's how Fred Worp passed away suddenly. The rest is silence.

—Eric Nicol

★ PROVIDENCE, R.I.—Rhode Island Hospital doctors have invented a breathing machine with a built-in electronic brain which is believed to come closer to nature's specifications than any other artificial respirator. —*Associated Press*

The Traffic Disease

Technocracy has long pointed out that the retention of the Price System and any satisfactory solution to this Continent's traffic problem are mutually exclusive. Nowhere can this be more convincingly demonstrated than in the case of traffic congestion.

THE North American Continent is saddled with a traffic problem that is rapidly becoming intolerable. This state of affairs, which has been developing for a number of years, is gradually intruding itself upon public consciousness, with the result that it is the subject of much current discussion.

Suggested solutions are many and varied, and range from the employment of more traffic policemen to the construction of more and better super-highways. Conspicuously absent, however, is any overall scientific approach aimed at alleviation of the condition, which has assumed the characteristics of a disease threatening to impair seriously the operation of our social organism.

North American motorists are butchering themselves and others by the thousands and destroying millions of dollars' worth of material annually. In the cities they watch traffic creep at the proverbial snail's pace and waste hours every day in vain searching for parking space. On the open highway, especially on week-ends and holidays, millions of cars pour into congested arteries to create a veritable nightmare of hurtling glass and metal.

Yet, despite the obvious hopelessness of any attempt by the highway builders to keep pace, the auto industry continues its endless grinding out of clumsy, out-sized and over-powered monstrosities by the multi-million. Figures recently issued by the U.S. industry reveal that in 1953 passenger car production reached 6,150,000 units, enough to crowd four transcontinental highways bumper-to-bumper in both directions! This figure, remember, which does not include more than a million trucks or the entire Canadian output, is for just one year.

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System and any satisfactory solution to this Continent's traffic problem are mutually exclusive. Nowhere can this be more convincingly demonstrated than in the case of traffic congestion.

Cars on the road are to some extent analogous to gas molecules in a bottle, for during their endless rushing about they must undergo by the laws of chance a certain number of collisions with each other and their surroundings. To reduce the frequency of these collisions, we can decrease the speed of the molecules, reduce their number, or enlarge the container. Coming back to cars, we find that although most responsible persons give at least lip service to speed reduction, there is a difference of opinion regarding the relative desirability of the other alternatives.

Spokesmen for various Price System institutions are fond of calling for the construction of more highways and enlargement of existing ones. While this is a desirable objective, Technocracy has pointed out that it is by itself incapable of solving the problem. Quite aside from the impossibility of building roads fast enough to accommodate six million new cars a year, even minus those which are taken out of service, there are two other very strong arguments against this approach. The first is the tremendous expense involved in increasing roadway accommodation in densely-populated areas where the greatest traffic congestion exists. The second is the fact that virtually every passenger car on the road, with the possible exception of taxis, is already being used so inefficiently as to violate all engineering principles regarding the efficient use of machinery.

It is certainly no exaggeration to say that the average private car spends 96% of its time standing idle. In technical parlance, our cars are operating at a virtual minimum load factor—no greater than 4%. If this could be increased to even 20% we could get along without at least **four-fifths** of our present automobiles!

In direct contrast to the maximum load factor required by sound engineering practice for alleviation of traffic congestion, the operation of the Price System requires that automobiles (and for that matter all such consumer goods) be used at a minimum load factor. The reasons for this are

so evident that they scarcely require elaboration. Obviously the more inefficiently cars are used the more of them can be sold, and the greater the profits accruing to business.

The folly of embarking on an endless and poorly-integrated highway construction program should be evident when North Americans are already using at least five times as many automobiles as they need. This is not to say that this Continent is not in serious need of a redesigned and extended highway system. Such a project is analogous to enlarging the bottle containing the gas molecules. Although many thousands of miles of road are being constructed or rebuilt each year by ten provinces, forty-eight states and innumerable municipalities, there is little attempt being made to fit them into a larger plan. In the few cases where some effort has been made in this direction, as with the Trans-Canada Highway, the discord and difficulty of agreement have been all too evident. In addition, the highway builders are fighting a losing battle against the spawn of Detroit and Windsor.

If used in conjunction with a higher automobile load factor, the improvement in roads both in quality and quantity could go far toward a cure of the present traffic disease. As long ago as 1940 Technocracy submitted to the citizens of North America a plan for a Continental super-highway system to provide adequate main road transportation from the northern coast of South America to the shores of the Arctic Ocean, and from the coast of Labrador to the tip of the Alaska Peninsula. The plan provides for seven transcontinental super-highways crossing Canada, the United States and Mexico, in addition to two linking Mexico with Alaska and several other north-south highways.

Although Continental defence was uppermost in mind when this system was proposed, the peacetime advantages cannot be overemphasized. The need for better roads is urgent; most of today's highways are antiquated carryovers from the horse-and-buggy era of the last century, and are totally unfit to handle anything approaching today's heavy traffic. Application of the latest highway engineering techniques has been blocked by financial limitations except for a few of the most

heavily travelled roads in densely populated areas, and even here the potentialities are only beginning to be tapped. We need only read of research in such fields as chemically and electrically treated pavement and automatically directed vehicles to realize how much could be done that cannot be done as long as dollars must be found to pay for it.

The question of the relationship between greater speed and the increase in traffic accidents has been the subject of extensive debate. It is probable that some experienced drivers who are endowed with acute senses and fast reflexes can safely drive at greater speeds than can others who are less fortunate, and it is evident that speeds which would be suicidal on a winding mountain trail are relatively safe on a straight wide stretch of four-lane highway. Nevertheless one cannot deny that there is a maximum safe speed even for the best drivers under optimum conditions on the most modern roads. This maximum is naturally affected by many variables, and its exact magnitude need not concern us at present. It is notable, though, that if any effort has been made to approach the problem of speed regulation scientifically it has been most unproductive of practical results.

If we can surmount in our imaginations the present Price System restrictions, it is not hard to visualize what could be attained. The movements of all vehicles on a given stretch of highway could be kept under constant scrutiny by radar. Continuous electrical regulation of the maximum speed of each would then be feasible, quite independently of the drivers' wishes, under the control of a central calculator designed for simultaneous evaluation of such pertinent factors as road surface, visibility, presence of other vehicles, and even the previously-measured and coded personal characteristics of the vehicle operator. The important point is that this would represent a technological solution, based not on unenforceable political edicts but on infrangible physical laws. The contrast with present attempts at control is enlightening.

Before leaving the subject of the driver it should be noted that almost nowhere is any serious attempt being made to ensure that the holder of an operator's licence

possesses the necessary qualities to drive a car safely and skilfully. Stories of people obtaining drivers' licences for their dogs are familiar to anyone who reads the newspapers. The drivers' licence is merely a special form of tax, and can be little better as long as it continues to be regarded primarily as a source of revenue.

Another major contribution to the traffic disease is the pathological condition of the cars themselves. Of congenital origin, this can be traced to the designing boards and sales departments of the manufacturers. A noted automobile authority and writer has recently stated that an idea to be adopted by the manufacturers must either make the car easier to sell, reduce the production expense, or make it easier to meet the service guarantee.

If these criteria are valid, the incorporation of really adequate safety features into production-line cars can be nothing but a dream as long as the Price System survives. For example, if a car-builder were to make safety belts a standard accessory, as recommended by safety experts, he would not only raise his costs but by calling attention to the inherent risks of driving would scare off many prospective buyers into the hands of his competitors, and be faced with a ruinous sales slump. In the Technate, on the other hand, removal of the power of veto vested in the buying public under a Price System will enable engineers to build into each car the maximum safety compatible with the efficient performance of its other functions.

Considering the mulititude of interferences erected against the efficient operation of traffic by the Price System, it is astounding that the traffic disease hasn't become worse than it is. But in many areas it appears that a crisis is being rapidly approached, and the absence of any integrated attack on the problem is becoming more evident from day to day.

Technocracy's plan for a Continental transportation system includes the removal of all cars from private ownership and the placing of responsibility for their operation under a transportation sequence, with their use being charged for on a time-mileage basis. In addition to providing the use of an automobile to anyone capable of driving one, this plan would automatically free the gen-

eral public from the responsibility of maintenance, which would be transferred entirely to skilled mechanics with the necessary training. The immense contribution of this idea to driving safety is self-evident.

Adoption of Technocracy's calendar, with its four-day work week and staggered shifts, and consequent levelling of the peak demand, would permit a great reduction of the number of cars in use and an increase of the load factor as previously mentioned.

Technocracy's blueprint for the operation of North America's social system is the only prescription offering a permanent cure for what has become a chronic condition of vehicular constipation.

—S. A. Brown

★ HAMILTON.—D. C. Gaskin, president of Studebaker Corporation's Canadian operations, warned recently that Canada's automotive industry is in trouble because of over-production resulting from a war between the giants of the industry.

Announcing a six-week shutdown of Studebaker's Hamilton plant for holidays and inventory purposes, Mr. Gaskin said present conditions are due to a 'very dangerous and serious fight between the two largest automotive producers in Canada battling for first place.'

Though he did not name any other companies, Canada's largest producers are Ford of Canada and General Motors.

Studebaker has lately been working only three days a week. Ford also has put a temporary cutback order into effect. The exact number of men Studebaker will recall in September, Mr. Gaskin said, will depend on 'what happens in the industry.'

—Canadian Press

★ CHICAGO.—Delegates at the closing session of the sixth international educational conference of the CIO United Auto Workers Union were warned that the country 'would be thrown into a depression and an economic crisis if the Eisenhower administration doesn't wake up.'

The warning was in a speech by Sen. Humphrey (D., Minn.).

Humphrey, who is a candidate for re-election in November, said that 'farmers are scared to death because they see their profits dropping and their overhead increasing at alarming rates.

'The farm parity has gone down from 99 to 91, 8 points in 15 months, since the administration started its new crusade in Washington. Every time the Secretary of Agriculture opens his mouth, parity goes down again.' *—Associated Press*

★ WASHINGTON.—The land-based model of the world's first nuclear submarine engine 'has already produced more than enough power to send an atomic submarine around the world, fully submerged and at full speed.'

The engine, a land-based 'prototype' of the atomic engine now installed in the Nautilus, is located at the Atomic Energy Commission's testing site in eastern Idaho.

—Associated Press

Paying Both Ways

AGRICULTURE Minister Gardiner told Parliament that neither he nor the government was unduly concerned about the huge butter surpluses being accumulated in Canada under government buying to keep up the price.

But at their national convention dairy farmers indicated that they were concerned. Present butter stocks are the highest on record. There was a carryover in excess of 30,000,000 pounds in May when the new production season opened with its promise of still larger production for 1954.

And there can be no doubt that the Canadian taxpayers are concerned with this butter hoarding. Results of government food buying to keep up prices hold no comfort for the taxpayer.

The federal government bought millions of pounds of beef at 45 cents a pound and then sold it for 15 cents a pound. It bought millions of pounds of canned pork for 60 cents a pound and sold it for 18 cents.

In both cases, the bills were passed on to the taxpayer, who found himself hit both going and coming. Not only did he pay for the loss, but he had to pay higher prices for the meat he consumed himself, because the government was using his tax money to force up the prices on himself.

Worse than that, when the government held its bargain sales of meat, the Canadian consumer was not allowed to get in on the bargain. The bargains were held for housewives in Germany and other parts of Europe.

It is a similar story in the United States. There the government bought up 25% of all the butter made there last year. Now it is finding it difficult even to give some of it away. And the American taxpayer-consumer, like the Canadian, is caught both ways!

Butter may be just a spread for bread to the average consumer, but as the Ottawa Journal says, it has been a political hot potato for years.

In 1929 the import of 15,000,000 pounds of butter from New Zealand was credited with defeating the Mackenzie King government.

It could cause a lot of political trouble again.

—Vancouver News-Herald

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the membe. to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Whatever the future of Technocracy, one must fairly say that it is the only program of social and economic reconstruction which is in complete intellectual and technical accord with the age in which we live.

—Encyclopedia Americana

TECHNOCRACY DIGEST

FEB. 35

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Defense Monopoly

Electronics, the Queen

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Sugar Beet Industry Mechanized

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Science in Mine Finding

No. 155

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

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The Quarterly Survey

Automation and Jobs

The automation trend is growing and it is hitting the headlines of the North American press. What had heretofore been a gradual process in recent years has increased so rapidly that a completely automatic factory is now possible.

One machine, constructed by the Massachusetts Institute of Technology at a cost of $350,000 for the U.S. Air Force, is now turning out finely machined aircraft parts without the help of a single human hand. The men who built it say that similar research, applied on the giant scale of the Manhattan Project, could develop a completely robot factory.

Even now, automation is raising serious problems and creating fears in labor unions that technology will throw its members onto the scrap heap. The CIO's Walter Reuther thinks that 200,000 auto workers may soon be able to do all the work of the present 1,000,000 because of the rapid growth of automation.

Because of increased mechanization, U.S. employment has not been able to regain its level of August, 1953, although new workers are entering the labor force at the rate of 500,000 plus a year —a rate which will soon accelerate. With a total of 2,700,000 officially listed as not working, Americans have been able to turn out and consume virtually as much goods as at the record heights of the boom.

Adrift

Justus in The Minneapolis Star

With the automation trend coming to the fore, attention is being focussed on Technocracy which has the only answer to the problem of how to live harmoniously in a technological environment. We predict that in the days ahead Technocracy will really come into its own with its solution of a shorter work week and a scientific medium of distribution which will provide abundance to every citizen on this Continent.

Scientists Turn

One of America's top scientists has accused unnamed congressmen of striking 'close to the heart of our national strength' in attacking scientists 'to gain personal publicity.' Dr. Joel Hildebrand, professor Emeritus of chemistry at the University of California and president-elect of the American Chemical Society, made his remarks at the recent convention of the American Association for the Advancement of Science.

Dr. Hildebrand said that the public must come to recognize that 'a single congressman masquerading as a committee and announcing in advance of a hearing what he intends to find, is really conducting not an investigation but a personal advertising campaign.' He stated that witch-hunting congressmen are 'conscious of the fact that they wither in obscurity.'

Some of America's most prominent scientists joined in the attack. Dr. Warren Weaver, retiring president of the AAAS, said that the science profession 'cannot afford to disregard' the 'sickness of rumor and anxiety, of suspicion and distrust, and, at its worst, of fear and tragedy.'

Dr. Weaver said: 'In part it is an anti-intellectualism, a strange and dangerous lack of faith in scholarly competence. In part it is the horrid result of political pressure, of personal selfishness and of pathological arrogance of demagogues with small and nasty minds.'

Unemployment Up

A report from the National Employment Service indicates that at December 9 the number of Canadians registered for jobs with that government agency was 362,-678. This was an increase of 64,-103 in three weeks and up 24,612 from the same time a year earlier.

A Dominion Bureau of Statistics estimate—based on a sampling

survey—states that at December 11 there were 247,000 Canadians without work and looking for jobs, up 33,000 from three weeks earlier and up 57,000 from the same time in 1953.

Claude Jodoin, president of the 580,000 - member Trades and Labor Congress of Canada, said the Bureau figures showing a 30-percent increase over a year 'leave no doubt unemployment has reached serious proportions.'

Donald MacDonald, secretary-treasurer of the 375,000-member Canadian Congress of Labor, said that an 'extremely conservative' estimate of current unemployment is 550,000 and predicted that it will go much beyond 600,000 during the winter.

This would be a postwar peak. The high came in March, 1954, when the Bureau of Statistics estimated 318,000 jobless were looking for work and the Nation-Employment Service reported 570,000 were registered for jobs.

★ THE SPECTRE of push-button factories—and their effect on unemployment—was raised at Vancouver Trades and Labor Council meeting Tuesday (December 7) by delegates who attended a TLC labor seminar in Banff.

Everet King, B.C. Electric Office Workers' Union, said the problem of the automatic factory is one of the biggest organized labor will have to face.

He urged the unionists to study the problem in order to find a solution.

'We were told the factories in the U.S. would produce motors that are untouched by human hands.'

'Oil companies can now build refineries which will cut the labor force from 800 to 12 men.' —*Vancouver Daily Province*

★ IT TAKES A DISASTER like Hurricane Hazel to make most of us appreciate the importance of technology: Electricity is cut off when a tree falls across high tension wires, lights go out, there's no telephone, no Howdy Doody for the youngsters. Food spoils in the freezer. Oil burners stop. Electric clocks stop, and schedules get snarled. Commuter trains are later than usual. With the atomic age bursting open before us, our reliance on technology increases almost daily. —*Business Week*

★ LOS ANGELES.—The CIO convention here approved a resolution asking Congress to investigate the machine age and its effect on man's job.

The resolution asked for a probe of the 'present and prospective impact of technological development on our economy.'

It said automatic machines and new production techniques are displacing workers at a rapid rate. —*Canadian Press*

★ TECHNOLOGY IS SOLVING the age-old problem of man's search to produce abundance. It promises new horizons of better living for all. But it also threatens the economy with mass unemployment if these advances are not wisely used.

—*Walter Reuther, President of the CIO*

Guaranteed Lifetime Security

The current annual wage scheme is nothing more than a half-baked compromise with the Price System. Technocracy specifies a high income and a high guaranteed standard of living for all residents of North America, from birth to death.

THE PROBLEM of individual security is immediate and serious to millions of citizens in the United States and Canada—in spite of the documented claims that these countries have the highest standard of living in the world. A great many families have no savings, but live from week-to-week or month-to-month on their current income; and most of these are in debt or have fixed obligations, such as rent, which require that their incomes be continued indefinitely. Yet, there is the constant danger of sudden disemployment; possibly by political bureaus which are seeking to build up a statistical record of firings, possibly by employers who are gradually changing the ideological or racial characteristics of their personnel, or possibly by companies which are 'cutting costs' or going bankrupt. If there is not the danger of imminent disemployment, there is always the threat of reduced working time and rising costs.

The big bugaboo at present is automation. The billion dollar corporations are jubilant over the potential reductions in labor cost that automation implies; smaller corporations are jittery about their chances of survival; and the labor unions are desperate. Nobody appears to believe the Chamber of Commerce ballyhoo that automation really means that more workers will be employed at higher pay than before, because it will take more people, with higher skills, to build and service the machines than are displaced by the machines. This story is being circulated by the same people who tell children that storks deliver babies and that Stanta Claus brings Christmas presents, and who tell adults that warships, fighter planes, and atom bombs are symbols of peace. You can just imagine a big corporation

spending a billion dollars for automation equipment if it is going to increase the number of employees and raise their wages.

The big labor unions are pinning their hopes on a guaranted annual wage. Labor union leadership has never been long on strategic vision; and the guaranteed annual wage campaign reveals that its vision hasn't improved any. Even if management should tentatively agree to the annual wage scheme, there are more ways of sneaking a worker off the payroll than there are ways of cheating a customer. In a slightly different application, 'Big Jim' Farley showed the Roosevelt Administration how civil service employees could be fired wholesale and replaced by 'good Democrats': You just abolish the department, then set up a new department—with political appointive rather than civil service personnel—to do the same work. Similarly, if a corporation should decide to liquidate a a whole division and at the same time expand a parallel division to handle more business with no increase of employment, who pays the annual wage of those floated out of their jobs by the liquidation? If the operations of a whole factory require no employees, who is there to collect an annual wage? Or suppose the corporation automates most of its employees out and the new setup is operated entirely by a small staff of executives?

The economic welfare of an area depends upon the presence of a few fundamental requirements: Mineral resources, agricultural products and other raw materials, adequate energy, installed equipment, and trained personnel to operate the equipment. North America has all of these factors in plentiful supply. But there is another factor which is needed to make the economic pattern complete; it is an adequate system of distribution to the consumers. This is a secondary factor in the operation of an Area, for it is entirely a matter of social decision. But the inadequacy of this factor in North America is the one big cause of the troubles we have. There is no fundamental reason why all of the citizens of North America should not have all the goods and services they can use —available to them at all times, without fear or apprehensions on their part.

Most of the social ills and the

chronic symptoms related to them are traceable directly to the Price System method of distribution, which, incidentally, is not so much a method of distribution as it is a method of restricting distribution. Restriction of distribution has validity only when there is a scarcity and some of the consumers must do without, either in whole or in part. But the Price System has no validity in an economy of abundance. North America has the raw materials; it has the energy and technology; and it has the personnel to provide abundance. There is no physical hindrance to this Continent's producing and distributing all the goods and services its inhabitants can consume. The interference is ideological rather than physical. Specifically, those in control do not want the population to have abundance, because they are devoted to an ideology of scarcity for the many and riches for only a few. All of the dominant political, economic, and ecclesiastical philosophies extant throughout North America support such an ideology; and the public is, collectively, too apathetic to demand otherwise. This, fundamentally, is the ideology of the Price System.

For the thousands of years that scarcity prevailed, societies were characterized by human toil, class distinctions, faith in the supernatural, and premeditated inhumanity. The Price System survived and flourished, partly because it was a convenient facility for the distribution of scarcity at the same time it furnished a rational argument in support of the existing inequities, and partly because there was no feasible alternative available. That situation changed with the growth of science and technology. Science challenged the Authority of the Price System institutions and technology destroyed their foundations. The Old Order was disfranchized from its monopoly over social affairs by the technological acceleration incidental to the prosecution of World War I. Since then, the Price System has held on with borrowed money and repeated transfusions of debt; but it has failed to demonstrate its ability to maintain itself in a self-sustaining condition. In other words, the Old Order is being supported on relief.

The chief benefactors of the Price System have drastically altered their moral philosophy. In

the 'old days,' they contended that the good fortunes should go to the strong, the ruthless, and lucky (although they used different adjectives) and that economic misfortune was the natural consequence of some defect of character in the individual or of bad judgment. They further contended that government and other agencies of social regulation should assume a laissez faire attitude toward business. Now, the Price System hierarchy bewails the injustice of the forces which beset it; and it is continuously beseeching the governments, the military, and the pious to help rescue it from the booby traps into which it has stumbled. Thus, in the United States, big business has declared itself to be the ward and pampered pet of the federal government. It insists that society should be operated as a welfare state for big business. The other economic categories are in essential agreement with this, provided some economic crumbs are brushed their respective ways. For example, labor unions have become the stooges of big business, asking only that big business buy a generous amount of man-hours at marked-up rates. The Protestant church organizations fail to register any clear dissent, hoping that big business will be philanthropic in their direction.

But, in spite of all that can be done to uphold the Price System, the inroads of technology are chewing away the props faster than they can be mended. The Old Guard has found no answer for automation, which it is also powerless to hold back. The labor union leaders are gathering together in frightened huddles. And the Chambers of Commerce continue to grind out optimistic myths about 'machines make jobs.'

The great problem facing the American people is that of survival in the midst of abundance. How to get enough purchasing power to buy the necessities and comforts of life is the daily concern of the individual and family. As work in factories and mines and on the farms is disappearing out of sight, and as alternative opportunities for employment are shrinking rather than expanding, the wage-earner and his family have a genuine cause for concern. The knowledge that there is a cushion of some 26 weeks unemployment compensation, should

the worker be laid off—providing the funds are available and the manner of disemployment does not disqualify him from receiving it — is not altogether reassuring. He knows that many people run through the compensation period without getting another job and thereby lose their right to receive 'earned income' or even to be listed on the rolls of the Labor Force anymore. Such people are not considered unemployed; statistically, they just don't exist among the employables.

John L. Lewis, leader of the United Mine Workers, has been very quiet lately. Evidently he sees no future as respectable citizens for his coal miners. The UMW can think of only such puerile palliatives as these: (a) Import less oil so as to force the use of more coal as fuel; (b) Lower the freight rates on coal to make it more economically available to larger areas of the country; and (c) Export more coal.

The CIO is in the forefront of those demanding the annual wage. The aristocrats of the Price System are against this; for, most of them, including congressmen, are on annual salaries whether they work or not, and they resent the lower classes achieving a similar distinction. But the annual wage scheme, as now presented, is in the category of 'too little and too late.' Too few people would be placed on the annual wage rolls; and there is little to guarantee that they would be kept there. Further, the income would be too low for a citizen of this Continent — as most incomes are today — considering the standard of living that could be provided for everyone under proper management. The annual wage scheme, even if generally adopted, is nothing more than a half-baked compromise with the Price System. Moreover, it offers no pattern for the economic welfare of all North American citizens.

The Catholic-dominated A.F. of L. beseeches the government to place larger armament orders with the manufacturers in the hope that more jobs will be sustained in this manner; and its spokesmen appear to be continually nudging the government to put a little more warmth into the Cold War.

Technocracy specifies a high income standard of living for all residents of North America, from birth to death. And this income shall not be dependent upon one's

status in society or position in the functional operations. We contend that it is strategically stupid to demand that a person earn his keep in this Power Age. If a person is to be permitted birth on this Continent; then, he must be provided maintenance for life.

This is a drastically new concept — one which is at variance with all the traditions of the Price System. The Old Guard will assail it with all the virulent arguments and sadistic violence they h a v e used over the centuries against every social advance. This is the same Old Guard that has resorted, time and time again, to the torture chambers, the slaughtering pits, the gas chambers, and the cremation o v e n s to demonstrate its purity of purpose. But, however much at fault we may hold the individual guardians of the Price System, let us not be sidetracked into a moralistic dead-end by pointing the f i n g e r of blame at the individual agents instead of at the institutions they serve. The real culprit is the Price System itself.

You cannot d e s t r o y fascism m e r e l y by destroying fascists. You cannot destroy communism by destroying communists. Y o u cannot destroy the Price System by destroying the a r i s t o c r a t i c guardians of scarcity. N o r can any of these destroy Technocracy by persecuting Technocrats. That has been the strategic error of the Old Guard through the centuries. Tactically, it has had some local, temporary successes; but a strategic long-term success has never been achieved by terroristic methods.

The concept of a high standard of living for every inhabitant of N o r t h America, guaranteed for life, is a social goal that must be approached from now on by the administrators of this Continent. E v e n t s are compelling it, and Technocracy's program has anticipated the e v e n t s. Technocrats do not propose it from the standpoint of a moral philosophy. We do not pretend that man deserves any such circumstance as lifelong abundance and security; and we do not know whether it will be 'good' for him. Technocracy proposes it, not so much as an ideology but as a s o c i a l expedient. Since abundance is available, it is far simpler from an administrative standpoint to distribute it equitably than to philosophize into being a pattern of differential

distribution. Any attempt to classify the individuals of an area according to a graduated scale of economic worth is a sure way to disturb the social tranquility of that area. In the Technate, there may be social rewards and censures for individuals, but they will not be in the form of economic enhancements or curtailments.

We can anticipate that, without the machinations of the Price System to work with, the differential status of individuals in society will be reduced to near insignificance. Individuals will continue to be different in a variety of ways—in physique, in tastes, in intellectual capacity, and in the things that interest them. Some will contribute more to society than others; but that will be incidental and, perhaps, only casually noted. But the differences that are recognized will be other than economic; for, there will be neither parasitic orchids nor 'neediest families' to furnish contrasts.

No Price System institution can possibly guarantee a high standard of living to all the inhabitants of an area. Private business enterprise cannot do it; labor unionism cannot do it; and political government cannot do it. All that these can do is juggle the statistical figures so that it appears to those who don't know otherwise that the American people have a high and glorious standard of living.

Statistically, North Americans have a wealth of shiny gadgets, but these gadgets cost many man-hours of work to purchase and they consume considerable amounts of electrical energy and petroleum products in their operation. If one does not count the cost of purchase and operation. the gadgets do seem to accomplish many tasks much quicker and easier than the human toiler could without them. The fact that each family must purchase, maintain, and replace frequently a whole array of costly gadgets in order to live up to The American Way proves to be a considerable burden and worry to the majority of families. This is made worse by the social mores, which rate one's relative standing in the community in accordance with one's ownership and display of possessions —regardless of whether that ownership is real, virtual, or merely apparent. In order to exhibit a

newer and more lavish display of possessions, most families mortgage their future incomes to or near the limits of their credit (and some maneuver surreptitiously to get beyond those limits). This practice, while it may temporarily enhance our apparent standard of living during a period of 'good times,' actually reduces our standard of living over the long haul because of the interest we must pay on our indebtedness; and we are always threatened with bankruptcy and foreclosures in the event of 'hard times.'

A far higher actual standard of living and far greater security could be obtained by the consumers, at the same or less cost (even under the Price System) through the simple expedient of collective ownership and pooling of gadgets. The individuals and families could then withdraw what they wanted from the common pool as required and pay for them on a time-use basis. Such a proposal, however, if seriously considered, would arouse the ire of all the agencies of the North American Price System and draw forth from them the most dire blasphemy. It would be labeled 'socialism' at least; and the implications would be that, if it is called socialism, it is automatically evil. Perhaps the Attorney General could be induced to list any supporters of the idea as 'un-American.' On this Continent, under the Price System, the triumvirate of chiselling—the political, business, and clerical oligarchies—is organized to rape the consumer and keep him in a subjected and worried state.

Technocracy is designed to provide all citizens of the Area with the maximum standard of living at the lowest cost, both to the society and to the individual, and to guarantee the highest standard of security for all. The individual would not be burdened with the problem of acquiring and maintaining personal possession of a whole array of things which advertising promotion has conditioned us to associate with the normal process of living. The things that one needs or wants would be available at all times, however; most of them without specific cost to the individual.

For example, everyone needs a dwelling. In the Technate, the provision of a dwelling is the responsibility of the society, not of the individual or family. A standard

dwelling in the Technate will be the equivalent in ease and comfort of living to the best hotel apartments of today, with maintenance and services provided by the Technate. The present day occupation of housewife, we predict, will gradually fade away as the population adjusts to the idea that a woman does not have to be a household drudge, or even do any of the ordinary household work, in a well-organized society. If one insists on doing his or her own housework in the Technate, it will be the result of personal preference and choice; for, otherwise, it would be done for him 'at no extra cost.' There would be a variety of designs of dwellings to suit different sizes of households, different patterns of activities, and different tastes. The detailed furnishings would be a matter of choice of the dweller. Heat, light, utilities (including an automatic tube delivery service) would be included. Should a person decide to move to another location, he would simply turn over to the Technate his present dwelling and apply for another at the new location. Such personal household furnishings as he wanted to keep would be transported to the new dwelling. Compare this simple procedure with the frightful problem of moving from one place to another today. If one desired a more elaborate or costly dwelling than the standard, he would be charged for the difference out of his personal income.

Likewise, everyone must eat. Some will require more food than others, and each will have his own favorite menus. But the variety of food demanded in any given region will be fairly constant and the quantity will be proportional to the population of the region. Hence, it will be much simpler to feed the people without bothering to make an individual accounting of the food consumed. That which is consumed would be accounted for and replaced on a regional basis rather than on an individual basis. There will be an adequate number of high quality eating places available to all, at all hours, where one may go and order the meals he likes. Or there will be home delivery of prepared meals for those who prefer to eat at home. Or, possibly, you will be able to induce Mom to buy groceries and prepare 'old fashioned' meals in the home, but we doubt it.

The opportunities and facilities for an abundant life will be here for all. If you have become habituated to spending your leisure time at the race tracks, sports arenas, and bingo games, you will either have to develop interest in some other amusement or continue with these same amusements from some other reason than the prevalent ones of today. For, in the Technate, you will not be able to make or lose money by gambling. If you participate in games of chance or skill, either as performers or spectators, it will be from an interest in the games themselves, not because of the side bets. There will be many ways of 'passing the time' for those who lack creative ability or interests; and, for those who have some talent or a curiosity for knowledge, life in the Technate will be highly interesting and exciting.

With no incentive in the form of monetary gain for those who would swindle, rob, exploit, or endanger the lives of their fellowmen, most of the hazards of life for the individual will vanish. Likewise, without incentives in the form of war profits, there will be none of the present clamor for war. In fact, it may become the highest form of crime for one to even suggest war. Diplomacy and statesmanship will have to take the place of power politics and the force of arms in the conduct of international affairs of the future. Social tranquility will become one of the major characteristics of the Age of Technology. We say this, not from mere wishful hoping; but, partly, because such is inherent in science and technology when they are divorced from politics, finance economics, and ecclesiasticism; and, partly, because there is no other road to human survival.

If an abundance is to be available to all, who is going to do the work? From the frequency with which that inquiry pops up in discussions on Technocracy, one would suppose there was a world-wide conspiracy to promote that question. Perhaps, however, it arises spontaneously from one's Price System conditioning, wherein one is always on the lookout for some way to gyp the system. The 'work' of the Technate will be such a minor quantity from the standpoint of demand on the man-hours of the individual Citizen that it can be disregarded as

a major problem. The simplest and most satisfying answer to the problem of personnel requirements is the equal division of the work among the people of the Continent on a man-hour basis. It is the method of allocating human effort which will meet with the least objection; and, as memories of the Price System fade into limbo, there won't even be thoughts of trying to finagle around this social responsibility.

We can anticipate as a probability that, as the social demand on human time becomes less and less, the Social Control will release from participation in the so-called work of the society those persons whose intellectual interests or talents are sufficiently outstanding; so that they can spend the time, instead, in the development of their talents or in the pursuit of their interests as their contribution to the society. This would, of course, be so handled as to avoid any implications that regular function in the society is a form of punishment or that release from function for the development of one's talents or interests is a form of social reward. They will be treated as equivalents in the dispensing of social recognition.

Technocrats can hold out no hope of economic security for the majority under the Price System but can only predict greater turbulence and instability as more extraneous energy and automaticity are thrown into the physical operations of this Continent. The futility and paucity of concept behind the annual wage proposal will become more apparent the further it is pushed toward general adoption.

The best strategy for Labor, as well as for all other groups of North Americans, is still to join Technocracy and help install the social system that will provide everyone with the most for the least effort. **—Wilton Ivie, CHQ**

★ VANCOUVER.—Donald MacDonald, national secretary of the Canadian Congress of Labor, said here 'nothing short of another Korean war' will prevent unemployment in Canada from topping the 600,000-mark this winter.

'I'm sorry to see it turn out this way but there's apparently nothing that can stop unemployment from shooting past 600,000 by early March,' he said.

'Only something unforeseen, such as the outbreak of another Korean war, can stop this upward trend in the nation's jobless.' —*Canadian Press*

Defense Monopoly

Concentration of economic power was intensified by the Korean conflict. Ten large firms handled 30% of the war-contract dollar volume in World War II and 40% in the Korean war. Post-Korean contracts have gone largely to General Motors and a few other giants.

IN AMERICA depressions and wars have always provided a favorable climate for the growth of economic monopoly, but the development of corporate giants during World War II was greater than anyone had expected. In 1939 big firms—those employing 500 or more persons—constituted 1% of all manufacturing firms in the United States and employed 48% of the labor force. By 1944 such firms had become 2% of the total number and employed 62% of the labor force. Most of the new 'big firms' were in war industries. Indeed, in every war industry except steel the giants—with 10,000 or more employees — increased greatly in relative importance. In manufacturing as a whole, the giants accounted for 13% of total employment in 1939 and 31% in 1944.

The concentration which took place during the war was due largely to the distribution of the lion's share of war contracts to a handful of firms. The nearly $200,000,000,000 of supply contracts became, too, the key to the control of productive resources during the war. Companies which were awarded prime contracts obtained thereby the instruments of economic power. They received, first of all, money, in the form of substantial profits for the production of goods whose sale was assured; second, they were granted priority for needed materials, parts, and components; third, they were permitted to say how much of these priorities should be passed down to subcontractors, who these subcontractors should be, and how much each should receive; fourth, they could generally expand their facilities under extremely favorable amortization and carry-back provisions in the tax laws; and, fifth, as prime contractors they operated most of the government-owned facilities and

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usually had options to buy the plants at the end of the war. Of $175,000,000,000 in prime contracts over one-half (51%) went to 33 corporations. It is not surprising that big business flourished.

It may be argued that the concentration of defense contracts was not so great as it might seem, since many of these contracts were shared by big business with a host of little subcontractors. An analysis of subcontracting, however, shows that it was never as extensive as has been commonly assumed, and that most of the subcontracts, by value, were not awarded by big firms to smaller firms but rather to other large firms. It has been estimated that small companies accounted for some 30% of total war production and at most obtained 22% of prime contracts. Moreover, by becoming subcontractors many small firms lost their independent status. Since their market was the prime contractor, they had little need of a sales force; and since they usually obtained their supplies from the prime contractor, they were able to get along without a purchasing staff. Yet sales and purchasing staffs are generally requisites to survival in a competitive economy.

Since big concerns received the great bulk of both prime contracts and subcontracts they naturally obtained the major share of the nation's resources. Although materials were allocated by the War Production Board, their flow had to follow the pattern of production set by the contract awards. The result was that when war production began to decline and contracts to be curtailed, the prime contractors often 'pulled in' subcontracts — and allotments of materials — and performed the work themselves.

The extent of concentration in manufacturing during the postwar years was determined as much as by anything else by the way in which war-built production facilities were distributed. Manufacturing facilities in existence in 1939 had cost about $40,000,000,000 to build. To this capacity there was added by June, 1945, about $26,000,000,000 of new plant and equipment. Roughly two-thirds of this sum came directly from federal funds, the other third from private funds. The factory layouts, lighting, power installations, and other fa-

cilities were of the most modern design, high-quality and high-cost construction. The quality of the new equipment was even better than that of the plants. Moreover, it is estimated that some $20,000,000,000 of the $26,000,000,000 of war-time plant was usable for peace-time production either immediately or after only minor conversion. As a result, the manufacturing facilities of the 250 largest corporations in 1945 approximately equaled those of all corporations in 1939. It is therefore of great significance that in 1947 the industrial giants held 97% of all basic iron and steel facilities, 89% in shipbuilding, 78% in aircraft, and 77% in fabricated metal products. The government gave big business the plants, tools, resources, and a guaranteed market with which to fight World War II. Such a gift assured concentration of economic power during and after the war.

The concentration of economic power was intensified by the Korean conflict. Ten large manufacturing companies handled 30% of the war-contract dollar volume in World War II and 40% in the Korean war. Two-thirds of the war-contract dollar volume was handled by 100 companies in World War II and by 50 companies in the Korean war. The degree of this concentration was much less in the beginning than at the end of Korean hostilities. Clearly, military procurement devolved on fewer and fewer firms.

The Senate Small Business Committee found that in the Korean conflict as in World War II the prime contractors hoarded their contracts. They refused to subcontract unless their plants were operating at 100% of capacity. Furthermore, it was discovered that subcontractors with their existing facilities could have handled the defense work which piled up on the big corporations while these giants waited for their new plants to be completed.

Congressional investigations yielded some startling facts—for example, about General Motors, which received more in contracts, in dollar volume, than any other corporation. On 98 items purchased through United Motors Service Division, the General Motors distributor, the government paid an excess of $339,926.88, which amounted to a profit to the corporation of 35.9%. On items not purchased through Un-

ited Motors Service Division the profit was 5.7%. A former General Motors employee, H. R. Boyer, was responsible for a $68,000,000 order on 757 vertical turret lathes going to a G.M. subsidiary, Fisher Body Corporation, which bid $90,000 per lathe and was virtually given some 490 units of tooling machinery by the government to do the job. The Bullard Company of Bridgeport, Connecticut, bid $38,000 per lathe and had the experience and tools for the job—but did not get the order. Apparently it did not have the right man in the right place.

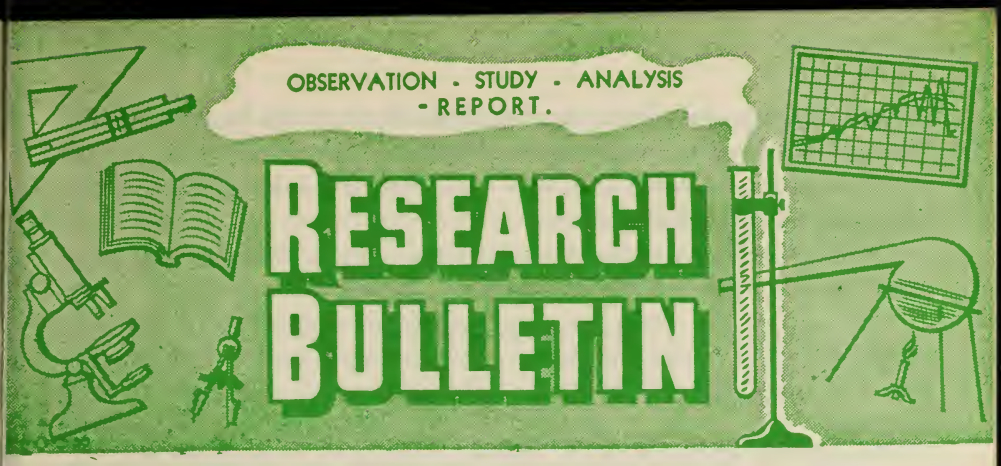
When the president of General Motors became Secretary of Defense, machinery was set in motion to change the industrial plan for national defense. The former Joint Chiefs of Staff and General Marshall had a procurement plan resting on a broad industrial base. Its purpose was twofold: (1) to have many firms which could step up production suddenly in case of emergency and thus save the nation untold hours of new tooling up and building for defense; and (2) in these days of atomic bombs to avoid putting all our eggs in one or a few baskets. Mr. Wilson changed all this: production was concentrated in a few large firms. Post-Korean contracts have gone largely to G.M. and a few other giants despite the protests of Senator Kefauver and others.

Some years ago W. J. Ballinger, the economist, told the Temporary National Economic Commission:

'Lest the people learn the lesson of history, the dark powers of concentrated wealth choose in each new struggle a new name for themselves, avoiding the old names that carry the historic smell of tyranny. . . . In America we call the lesser rulers business leaders and corporation lawyers; the great ones are simply kings —oil kings, match kings, soap kings — hundreds of them. The great Overlord who will draw them all together into a perfect plutocratic dictatorship has not yet appeared. But there are portents in the heavens which betoken his opportunity.'

Perhaps the man who directed the invasion of Normandy as part of Operation Overlord is the harbinger of the new era.

—Leland Traywick



FEBRUARY, 1955 *Compiled by Editorial Staff* No. 100

Electronics, the Queen

ELECTRONICS is the queen of our amazing technology. Queen Electronics makes modern life possible, harnessing electricity to produce things like television rather than just heat up toasters.

Queen Electronics operates juke boxes and hi-fi phonographs in 1955, controls smoke, detects atomic radiation and manages nuclear reactors. She rules telephone and teletype lines and sends radio signals. She directs computers or brains that solve mathematicians' problems and now run their first factories.

Lack of electronics would cripple a modern scientific laboratory, and in another war, say the generals, 'superior electronics would be decisive.' Queen Electronics detects far-away ships and planes, points guns, pilots aircraft and missiles and explodes shells, A-bombs and H-bombs.

Electronics accomplish all this by controlling the behavior of invisible particles called electrons. The electron is barely 50 years old

m its discovery, and electronics less than 10 years old as an industry. This queen's greatest wonders are ahead.

In a host of laboratories, new ones are now taking shape. Take just one—the RCA Laboratories.

I sat in the office of Dr. Vladimir Zworykin, a Russian-born electronic genius.

Zworykin sees TV leaving entertainment behind as a sideline, and becoming a universal, useful eye. Non-entertainment TV, agrees David Sarnoff, who heads RCA, will outdo entertainment TV as a business.

Cheap TV eyes will serve us in our homes, says Zworykin, at the flick of a switch watching the baby or telling us who's at the door. The same sets we use now will receive these pictures—on their extra channels.

'We will have a cheap TV camera about the size of a home movie camera,' Dr. Zworykin said. 'Here it is.'

He picked up a tube about one inch around and six inches long—'our latest vidicon, our TV eye.' With it, a simple TV camera now costs $1000 (price two years ago, $5000). In 10 years the price may be $100.

TV eyes will then superintend operations in factories, control automobile traffic and freight cars, watch manoeuvres for generals, aircraft for control towers and sales counters for retailers.

They will teach, guard prisoners and scan police suspects in coast-to-coast lineups. Hooked to electronic detectors, they will examine and count blood cells in hospitals, and inspect factory materials. In an atomic and chemical age, they will go places where man cannot.

Electronic wonders? There are many more.

Scientists are working on an electronic air conditioner with no motor, pump or moving parts—cheap, noiseless and small enough to be moved from room to room.

They are working on a 'light amplifier' to amplify light the way a loud-speaker amplifies sound. It would make dim TV pictures large and bright without reducing sharpness.

They are developing a portable noise destroyer—a 'reverse micro-

phone' to hang at your bedside and 'broadcast' air pressure to cancel out all deep-toned sound waves for a few feet.

Several laboratories today are studying the human voice. Their goal: 'Automatic secretaries' so you can talk into a mike and have your words typed. Such a machine could be built now to obey one voice. By studying the basic components of all voices, the scientists seek a machine to obey anyone.

'We could read electronically,' I was told by an electrical engineer. 'To the blind, for example. And someday the cost will be reasonable.'

Electronics will be put to work in future libraries, to track down information. Machines will translate foreign languages.

The greatest new electronic wonder of all went into first mass production in 1953.

This is a pea-sized speck of metal — the transistor, a kernel of material that can channel electrons and replace the vacuum tube in most of its uses. Vacuum tubes, which created electronics, are large, fragile, short-lived and expensive. They devour power and, in numbers, create too much heat. Transistors are tiny, sturdy, practically everlasting and cheap. They take a mere trickle of power and stay cool.

They are being put into many uses already, for example in hearing aids. But a transistor cannot just be plugged in for a vacuum tube —whole new circuits must be designed. When that is done and production increases and transistors are ready, they will probably replace every tube in your TV set but the picture tube.

I have seen just such a tubeless set, its whole works not much larger than a portable typewriter. I saw a wireless, cigar-sized roving microphone, and a personal radio receiver the size of a cigaret pack.

Today, still, we are not far from the hand-made, one-part-at-a-time stage of electronics. Electronic circuits are still masses of solder and wire.

Ahead is simplicity. Transistors. Similar mighty specks of sensitive material. Electronic brains that fill rooms may yet be reduced to brain size.

Transistors and the new electronics will then make the real automatic factory practical—the plant or whole industry run by electronic controllers.

'They will provide reliability, compactness and low power consumption,' say the experts, 'to lift information-handling and computing machines—the nub of the Second Industrial Revolution now upon us --to any imaginable complexity.'—**Victor Cohn in Vancouver Province**

Sugar Beet Industry Mechanized

AGRICULTURE'S mechanical revolution has finally overtaken beet sugar production. The beets that this year (1954) are being turned into almost 2,000,000 tons of sugar, enough to meet 22% of the nation's annual needs, have been harvested almost wholly by mechanical means. This is in sharp contrast to the situation only a few years ago.

Sugar-beet growers in 22 states from Ohio to California, the greatest producer of all, were almost finished with the beet harvest by December 1. Western Beet Sugar Producers, Inc., representing the country's major processors, called it 'the most efficient beet harvest ever experienced' and said 95 to 99% of it had been done mechanically.

'Stoop labor,' or hand picking which has been done in the past to a considerable degree by Mexican nationals, no longer is a major factor in the harvesting. Even 'chopping' in the spring—the operation in which excess plants are removed from the rows—is gradually becoming mechanized.

This revolution has taken place since World War II. It has resulted this year in a harvest in which slightly more than one hour of field work has been needed to produce enough beets to make 100 pounds of refined sugar. This was described as 'the lowest man-hour requirement of any sugar-producing area in the world.'

Were it not for the hand chopping and weeding operations, the contrast would be even more striking. As it is, studies made in 1947-48, when there was very little mechanization, showed two hours and six minutes of field work for every 100 pounds of sugar.

Plantings for the 1954 crop totaled 944,005 acres, an area one-fifth greater than that of Rhode Island. This was an increase of more than 100,000 acres over the average for the preceding five years. This year's estimated production of sugar is greater than the 1,870,000 tons of 1953. The 1949-53 average was 1,711,000 tons.

Some 3,000,000 man-hours of labor were saved by mechanization of beet farming from 1950 to 1953, according to the Department of Agriculture. During the same period, mechanization rose from 61 to 87% of the industry. **—New York Times**

Science in Mine Finding

WANT to find a mine? The modern mine developer seeking his fortune in the discovery of a mine takes a far different approach to this fascinating business than his predecessor of even a decade ago.

This is the age of the geophysical survey—the enlistment of science in tracking down the elusive ore body which may not outcrop at surface at all.

So helpful have the new surveys been that the pace of mine-finding has been greatly accelerated. Probably not more than a third of new mines have been located through geophysical techniques but the record of success has been gratifying to those in the business.

It is not so many years ago that geophysical surveys were regarded as 'crackpot' even though the geophysical work of Thomas Alva Edison led to discovery of the big Falconbridge nickel mine.

While the day of the doubting Thomases is pretty well past now, it must be recorded that geophysical surveys don't find ore bodies; they merely point the finger at places where ore bodies may be found.

More and more it is becoming possible to eliminate part of the 'anomalies' before diamond drilling or other work is done to prove or disprove the presence of ore bodies. But anomalies are often so common that one mining man in disgust has said 'anomalies are like heads; everyone has one.'

By using a combination of different geophysical techniques it is often possible to eliminate a large part of anomalies as unlikely to represent ore bodies. But even then, some surprising things happen.

For instance, there is the case of the large Canadian mining company which found a very large anomaly in the course of an aerial survey. The company went to work and acquired the mining rights for the farms in the area involved and then went to work to test the anomaly by drilling. Nothing interesting could be found that would explain the anomaly and the engineers began to scratch their heads. Finally it was decided that the 'anomaly' was a farmer's fence; sure enough, the fence was taken down and the anomaly vanished!

Of even more trouble than farmers' fences, however, are buried water mains. A geophysical firm which has considerable success in assisting in discovery of ore bodies through completion of electromagnetic ground surveys always asks the people for whom a job is to be done about the water mains.

But even this doesn't eliminate troubles. A geophysical survey on a cobalt property picked up a fine anomaly—a water main.

A special survey job was being done for some city fathers on an island in the Mediterranean. There was stated to be no water mains. But the survey came up with a six-inch water main the city fathers didn't even know existed.

Then anomalies have been great teasers on occasion. Look at the huge sums of money spent by U.S. Steel in retaining mineral rights covering a large magnetic anomaly in the Simcoe area of Ontario without finding any commercial ore body.

An airborne magnetometer - scintillometer survey completed by the Ontario Government in the Parry Sound district revealed one huge magnetic anomaly. But a ground traverse of the big anomaly showed only granite; apparently just a very little finely disseminated magnetite in the granite will produce a big 'anomaly.'

From the foregoing it might be thought that geophysical surveys aren't worth while. Nothing could be further from the truth. Just two ore bodies found through geophysical work—the two big ore bodies of Brunswick Mining & Smelting in New Brunswick will probably

repay many times over for the cost of all geophysical work completed in Canada to date. The survey which resulted in location of the original Bathurst ore body cost only $1,600.

While ground survey types of geophysical exploration have been carried on with more or less rudimentary knowledge for decades, World War II played an important part in perfecting geophysical techniques.

When the sub menace became acute, an aerial magnetometer was devised for trailing from a plane which would pick up trace of submarines far below the surface so that they could be destroyed by depth charges or other means. After World War II, the aerial magnetometer, greatly improved, was put to work to track down areas of magnetic attraction where ore bodies might be located.

Of course a lot of things other than magnetite iron ore bodies and sulphide (base metal) ore bodies are magnetic and followup groundwork, using geophysical techniques, has usually been desirable before rushing diamond drills in.

A natural followup to aerial magnetometer work has been electro-magnetic survey work where 'conductors' are picked up through the setting up of an electrical field with a coil.

Readings taken by various locations help to determine the location, size and attitude of the anomaly. If the developer wishes to be more certain that the anomaly or conductor is important, a gravity-meter ground survey may be done as well to see if there is a strong gravitational pull from heavy dense material and possibly an ore body represented by the electrical-magnetic conductor.

But even then, without drilling, it is not possible to be sure that an ore body will be established. Many electro-magnetic anomalies turn out to be graphite rather than sulphide-bearing material. If sulphides are encountered they may be barren of valuable minerals such as lead, copper, nickel and zinc.

But geophysical work of this kind is much less expensive than large-scale ground work which may involve deep trenching with bulldozers and cross-sectional testing may be of little real attraction

Geophysical surveys are proving of much value in the search for

other minerals than the common base metals and magnetite iron ore.

Early airborne scintillometer surveys picked up known discoveries quite easily but left much to be desired when it came to making definite new discoveries. Part of this was probably due to the fact that a little uncovered radioactivity could cause a 'high' on the radioactivity chart and a little overburden mask a good radioactive showing.

But later radioactivity flying has been done with radar correction to allow for hill distortion with a simultaneous photograph record to permit ground orientation. It is possible to fly magnetometer and scintillometer surveys at the same time and uranium and base metal deposits can thus be sought simultaneously.

Prospecting for gold is at a low ebb just now but geophysical surveys serve a very useful role in seeking gold ore bodies. The geophysical survey can't locate a gold ore body as such but gold is usually associated with iron structure and a geophysical survey in a known gold area can track down iron formation on subsequent investigation.

Most of the large companies such as International Nickel Falconbridge, etc., regard geophysical work as a standard technique in the search for ore bodies. A new mineral prospect will be given a standard geophysical investigation before the more expensive followup work of diamond drilling is employed.

Occasionally, the survey helps in a rather odd way. Take the experience of Falconbridge Nickel Mines in exploitation of the property of Maskwa's Nickel-Chrome in Manitoba. Commercial nickel-copper ore deposition has been established in association with magnetite. But nickel values are low where the magnetic anomalies are strong and the nickel is better grade where the magnetite mineralization is weaker. This makes geophysical interpretation quite a jigsaw puzzle.

On one property, Dunveggan, Falconbridge was unable to establish an anomaly pattern from geophysical work due to the widely distributed character of the nickel mineralization.

Now, however, geochemical techniques (analyzing of leaves of

plants and trees) have been successfully used to provide a 'pattern' which will no doubt be tested by drilling.

While tremendous strides have been made in detection of mineral deposits by geophysical methods, great further promise is held for this science. Refinements of techniques are being constantly developed, reducing costs and making detection of ore bodies just that much more simple.

Some minerals, such as hematite iron ore, are very difficult to track down with the use of any known methods and much of tomorrow's prospecting will probably be done in the laboratory seeking new ways to unravel the story of the earth's mineral riches.—**Financial Post**

★ PITTSBURGH, Pa.—A new piece of steel-making equipment designed to cut costs by eliminating such old standbys as the ingot and blooming mill is in commercial production in the U.S.

Koppers Company Inc., manufacturer of steel producing equipment, is selling the steel man's dream after years of experimental work. It is called a continuous casting machine.

For almost a century the industry has been pouring ingots cooling, trimming and then reheating them for the blooming mill.

In blooming mills the ingots are rolled and pressed into billets for steel bar making; slabs from which steel sheet and strip is rolled, and rounds from which tubing and wire is drawn.

The continuous casting machine would eliminate all of this. It is designed to take molten steel from open hearths—or electric or Bessemer furnaces—and cast it directly into any one of the three forms.

Such a machine naturally would reduce labor cost and plant spread requirements.

Koppers' first customer for a continuous caster was Atlas Steels Ltd., of Welland, Ontario. The equipment has been operating for some time. Both Koppers and Atlas agree it is successful. —*Associated Press*

★ REGINA.—Foot-weary cattle men can take heart in a new device designed to take the walking out of rounding up cows.

The instrument is a car horn which sounds like a love-sick Ayrshire.

It was developed by livestock men who noted in admiration that even the poorest of moose hunters could get a moose to come on the run with an imitation of a mating call blasted through a horn.

They wondered if a cow would react the same way to a mechanical bawl. They do.

Dr. E. Carlson, federal district veterinarian here, says he has seen the new mechanical bawl in operation and it 'works like a charm.'

'I don't know whether it has sex appeal or what,' Dr. Carlson said, 'but cows seem to fall for it every time.' —*Canadian Press*

Through The Technoscope. . .

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

COMPONENT PARTS OF A NEW remote weight-control system for continuously and accurately blending additives with process material are: an electric control system, automatic hopper scale, control panel and a constant-weight belt feeder.

Products handled include chemicals, foods, feeds, fertilizers, tobaccos, plastics, and cement and rock products. Developed by Richardson Scale Co., the system batch-weighs additives, continuously weighs process material, and features remote selection of weight ratios using a single dial control.

In operation, process material drops on a belt feeder and discharges into a mixer. Batches of additive material are weighed and automatically discharged into the same mixer. Signal for additives discharge is transmitted by an impulser on the belt feeder. Flow of material leaving the belt feeder determines discharge rate.

A DEVICE THAT MECHANICALLY computes metered volume of gases, steam or liquids from orifice meter charts, a new model integrator, has been introduced by Rockwell Manufacturing Co.

The electrically operated unit features a counter setback assembly operating from a main calibration post that enables the operator to run practically all ranges of charts at any base pressure. As a result, range settings are almost infinite in number, as compared with the limited number of range holes which could be provided in old style machines.

A NEW MACHINE THAT CAN FILter-tip cigarettes at a rate of 1200 per minute has been announced by American Machine & Foundry Co., New York. The tipper, shown in action, is said to require neither additional floor space nor more personnel, since it become an integral part of the cigarette making machine.

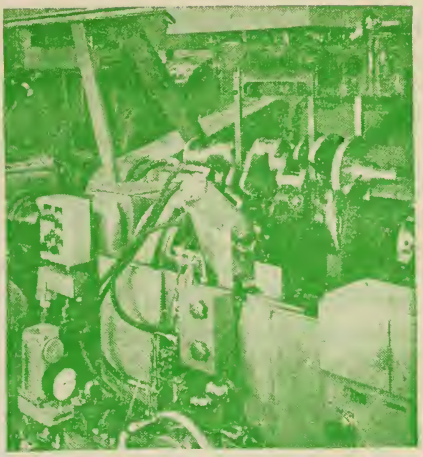
The tipper puts two cigarette lengths end to end, with a double-length filter plug between. Then it wraps the cigarette-plug assembly together with tipping material, and cuts through the center of the whole, leaving two filter-tipped cigarettes.

AUTOMATIC CHARGING IS AVAILable on a new car type kiln, which will allow one shift to prepare work that can be processed automatically through the remaining two shifts without an attendant. Built by Harper Electric Furnace Corp., Buffalo, New York, the kiln produces the consistent electrical characteristics necessary for ceramic component requirements in the electronics industry.

MOLSANDER, A NEW BELT SANDer for sanding molding, features an automatic feed mechanism which can carry work through the machine at rates of 20 to 55 feet per minute. The machine is manufactured by Boulign Co., Charlotte, North Carolina.

DEVELOPMENT OF AUTOMATIC manufacturing processes is the 'product' of the newly formed Control Products Co. Inc. The firm will design and produce automatic control systems for the steel, nonferrous, electrical, oil, chemical and other process industries.

SOLAR BATTERIES MAY HEAT your house someday, says a General Electric scientist. Large rooftop areas of silicone energy-gathering elements may also power lights and electrical appliances.



THE FIRST AUTOMATED CRANKpin grinder ever made is announced by Norton Co., Worcester, Mass. It will pick up a crankshaft from a conveyor line, automatically position the work in four successive grinding stations, then place the finished work on a conveyor that carries it to the next operation. It goes through all these steps without human effort, and grinds one shaft every minute.

SIX HUNDRED UNITS PER HOUR can be turned out by an automatic resistance welder developed by Multi-Hydromatic Welding & Manufacturing Co., Detroit. Built to weld retainers to valve gasket covers, the machine utilizes a continuous conveyor chain to carry parts on 12 fixtures moving intermittently by means of an air cylinder.

A NEW VIDICON TUBE, WEIGHING only two ounces yet possessing three times the sensitivity of the iconoscope

tube, will make possible more compact, lower-cost TV film cameras and associated equipment for broadcast film pick-up.

Developed by RCA Victor Division of Radio Corp. of America, this new electronic seeing eye is an outgrowth of the original Vidicon tube developed by RCA for closed-circuit industrial TV.

A NEW MONITORING RECORDER keeps tabs on as many as 30 machines at once, and signals immediately when one breaks down.

By passing an electric current through a tape of electro-sensitive paper, the recorder inscribes a continuous line for each machine. The current goes off if a machine stops.

The manufacturer is Alden Electronic & Impulse Recording Equipment Co., Westboro, Massachusetts.

A NEW HYDRAULIC UNIT DEVELoped by the machine tool division of Kalamazoo Tank & Silo Co., Kalamazoo, Michigan, attaches to most of the firm's metal cutting band saw machines, converting them into completely automatic bar feeds and metal cutoff saws. The device opens the saw frame to the correct height, opens vise, feeds to correct length, clamps vise, and lowers frame at a controlled rate automatically.

AT 100% EFFICIENCY, SHEFFIELD Corporation's latest model automotive cylinder bore gaging and classifying machine can inspect and classify two engine blocks per minute. The machine simultaneously measures and classifies bore diameters in a six-cylinder engine block, inspects out-of-roundness and taper, and stamps classification of each bore on the block.

LARGEST STEAM TURBINE GENerator in the world, with a 300,000-kw. capacity, has been ordered by Detroit Edison Co. Foster Wheeler Corp. will construct the generating equipment, Allis-Chalmers the turbine. The generator will top Philadelphia Electric's 275,000-kw. unit, now being built by Westinghouse.

A FLYING GEO-PHYSICAL LABORatory designed to help mining and oil industries find deposits of iron, oil, uranium, asbestos, titanium, copper, lead, zinc and nickel has been developed by a group of Toronto scientists. The scientists, who created the laboratory by installing three complex electronic systems in a Canso flying boat, say it can get in one survey flight the data that formerly required two planes making two separate surveys.

The three devices are the airborne mengetometer, the scintillator and the electromagnetic detector. All have been widely used in recent years but technical difficulties previously prohibited installation of the three in a single aircraft.

A BATTERY-POWERED DELIVERY truck that is said to save 75% of the fuel and maintenance costs of a gasoline-driven truck has been announced by Gould-National Batteries Inc., Chicago. It can cover from 20 to 40 miles of a stop-start delivery route between battery charges. Maximum speed of the truck is 40 miles per hour.

No Room for Conceit

North Americans like to feel that they can attribute their high standard of living to a mass application of intelligence, but actually they have little room for conceit. Their history is largely a chronicle of opposition to the products of inventive genius.

WE flood our homes with daylight-like illumination by the simple flick of a wall switch. We plug in a cord to toast bread, make coffee or tea, fry bacon and eggs, cook a roast, shave, sew, wash and iron clothes, clean floors and perform virtually any other task that needs doing about the house. If our finances allow it, our homes can be heavy-duty wired for electric ranges, water heaters and radiant heating. Further than that, this Continent's population has telephones, automobiles, radios and television sets out of all proportion compared to the rest of the world.

Even within the restrictions of Price System operation, life is infinitely simpler in most of North America than elsewhere.

So accustomed have we become to the availability of numerous amenities that we have come to taking them for granted to an incongruous degree. We look with some condescension on less fortunately endowed peoples as if to imply that their conditions are less pleasant because of their less progressive concepts. On the other hand, we like to feel we can attribute our enhanced standard of living to a mass application of intelligence thereto.

Actually, the evidence indicates that far from such assumption being correct, most North Americans have little room for conceit. Our record of material progress has largely been a chronicle of opposition against the products of inventive genius.

The history of resistance is as long as that of our occupancy of this land area. Back in 1670, for instance, Governor Berkeley of Virginia said: 'I thank God there are no free schools, nor printing, and I hope we shall not have them these hundred years; for learning has brought disobedience and heresy and sects into the world, and printing has divulged

them and libels against the best government.'

When the bathtub was imported into the United States in the 1840's it was reviled as 'an epicurean innovation from England designed to corrupt the democratic simplicity of the Republic.' Rheumatic fever, inflammatory lung and other diseases were also charged against it by doctors of the time.

Similarly has virtually every modern convenience which we enjoy today had to battle against resistances of various kinds before being accepted into our general mode of living. The history of material progress undoubtedly would have seen us far beyond our present stage had it not been for the almost continuous opposition. Inventors, discoverers of new chemical and physical phenomena, and scientists in practically all other fields of research have changed the direction of social progression despite severe antipathy from the vast majority of their fellow citizens. Now the rest of us—beneficiaries of this intellectual largesse—have the effrontery to laud ourselves for being superior to other peoples!

The folly of this presumption is revealed from time to time when temporary lapses of service throw us on our own resources, displaying almost fantastic ego-deflating helplessness. We see this in the case of a stenographer who may attain 100 words a minute on a typewriter, but knows so little about her machine that she does not even know how to change the ribbon when required. She depends upon the services of a man who comes around monthly to clean her machine to perform this little chore.

Most men are hardly less dependent. We own and know how to operate automobiles, radios, washing machines and lawn mowers, but if anything goes wrong with them we haven't the slightest idea of how to fix them. In such cases we have to refer our troubles to specialists in the various lines. Yet our North American brand of smugness, seemingly impervious to shrinkage, is unimpaired by such examples of inadequacy.

North Americans owe their material progress to a very minor percentage of the population . . . people who have invariably used the scientific method in solving the problems they set for them-

selves. They have had the tenacity and intestinal fortitude to proceed with their work in spite of scorn, obstacles and personal hardship, achieving objectives for which they received slow recognition and compensation.

An analysis has been made of about twenty major inventions that proved important in the quarter century from 1888 to 1913 to determine how much lag existed between the time an idea for an invention was born and it actually came into being. On an average the gestation period has been 176 years. It took another 24 years to become of practical use, 14 years to be a commercial success, and another 12 years to become socially important . . . totalling 226 years of wasted knowledge!

The development of the air brake by George Westinghouse in 1868 is an important instance predating the period considered. Though his device was destined to save countless lives in railroad transportation he had the utmost difficulty in getting it adopted. A prominent railroad magnate and financier, heaping ridicule on the idea, told him he could not expect to stop a train with wind. Experiments with the air brake proved overwhelmingly successful, however, and eventually his scoffers were obliged to incorporate it throughout their whole railroad systems as the only brake adequate to steadily accelerating speeds.

Thomas Alva Edison . . . the 'Wizard of Menlo Park'. . . also experienced scorn in introducing his inventions to the American public. His first tests with his incandescent lamp were deemed a failure by the president of a well-known college. In the ensuing 76 years since 1879 the electric light has risen from the ignominy of considered failure to the role of being today easily one of the most pervasive influences in our lives.

Just after the turn of the century the Wright brothers carried out their first successful experiments with an engine-driven heavier-than-air flying machine. They had been making short test flights for six months when they were told flatly that it couldn't be done.

Resistances to inventions stem from sources such as fear of the unknown, labor fears of possible unemployment and business fears of less turnover of sales. Fear and

economic uncertainty, then, are dominant factors.

Examples of resistance to improved technology are so numerous that they hardly need be cited, though reference can be drawn to the strip coal miner, the cotton picker and the very recently successful sugar beet harvester which are disemploying thousands of hand laborers in these industries alone.

An important instance of business resistance to change was cited a few years ago by the U.S. Federal Communications Commission which revealed that the Bell Telephone System had suppressed 3,400 unused patents in order to forestall competition . . . 1,307 of which were 'patents voluntarily shelved by the American company and its patent-holding subsidiaries for competitive purposes.'

Until recently, few technological changes were initiated in the steel industry. Because of large investments in other processes the United States Steel Corporation rejected a number of inventions for superior methods which were in some cases ultimately adopted for economy's sake. The industry was slow in developing stainless steel because it was priced according to tonnage and was lighter than regular steel for comparable strength.

It will be noted that most patents which have been shelved have been for devices increasing the life span of consumer products or otherwise improving them to a degree that would discourage a large sales turnover. Contrariwise, inventions improving the methods of production or reducing the serviceability of consumer goods are strongly promoted. Most large manufacturing concerns, indeed, retain sizeable research staffs for this express purpose. This accounts mainly for the increasing automation of our factories and shoddiness of their products.

Let it be clearly understood, incidentally, that shoddiness is a product of the Price System . . . **not** of technology! Shoddiness is built into the design of the product and our superior technology merely carries out instructions. It would be just as easy to produce high-grade commodities, and indeed in some cases it would be simpler because very frequently considerable research is required to develop an inferior facsimile which will necessitate a rapid

turnover. Consider the case of the razor blade.

It should now be evident that only a portion of the resistance levelled against inventors and their improved techniques of performing work has risen spontaneously as an expression of popular reaction to change. The irrevocable conclusion to be deduced is that much opposition would disappear very soon if the complementing economic considerations were removed. As it stands now, introduction of new methods all too often reduces the number of man-hours employed so far that it seriously impairs purchasing power so that people affected are naturally suspicious and resentful of such innovations even though they eliminate physically irksome labor. Were the plaguing hazards of Price System uncertainty replaced by a scientific social design especially blue-printed to the requirements of abundance, it is highly probable that many North Americans would accept with alacrity numerous inventions which today they vigorously oppose.

Historian H. G. Wells has observed an 'empty gulf in quality between the superb and richly fruitful scientific investigations that are going on, and the general thought of other educated sections of the community.' This has already been partially borne out by our illustrations . . . many more of which abound. If the tendency is less evident today than in times past, it is because the last 50 years have seen a greater concentration of inventive headway than was made in all previous history, with the result that contemporary generations have been more conditioned to change than their ancestors.

Champions of our Price System were slow in realizing the benefits which would accrue to them by employing some of the labour-saving inventions, but once the advantages became evident they installed technology with accelerating enthusiasm. Curiously, in employing research staffs to find new productive techniques, the Price System has embarked upon a unidirectional course which can but lead to its destruction. Our continued failure to recognize the peril lying in the increasing disparity between declining purchasing power and mounting inventories can only be disastrous for all

persons residing in this Continental area.

Inventors—abetted by North America's extremely rich resources and power potential—have given us the material advantages which are ours today despite rather than because of the Price System. If we are to partake fully of their endowments we must lower the bars of resistance which have characterized our stand toward new techniques so far. Indeed, if we are to survive as a species, we must recognize the increasing inadequacy of Price System methods to distribute the benefits from this small and elite intellectual fraternity. We must turn instead to a new idea in the field of social operation . . . namely, Technocracy.

This body of thought, conceived by a group of social engineers who perceived unique circumstances arising from the unprecedented use of technology in World War I, was the logical conclusion derived from several years study of distribution problems in an area where scarcity was no longer a problem. Intensive consideration of all factors involved pointed undeviatingly toward a system of distribution which was based on a measurement of the extraneous energy used in consumer goods production. Further, their indagations revealed that the increasing pressure of power technology upon the social fabric would eventually immobilize the obsolescent Price System and render mandatory the adoption of a functional social mechanism.

Technocracy, then, is the **social** invention of 20th Century North America. Giving full acclaim to the inventors upon whose developments we rely so completely, it challenges the customary resistance of North Americans to change by heralding the only alternative to the chaos which will inevitably ensue if they persist in retaining their monetary concepts of scarcities and values.

Citizens can accept the challenge by putting into operation now the blueprint which Technocracy drafted for conditions of abundance over two decades ago. With the removal of Price System interference and the installation of the Technate, we will no longer oppose new inventions, but will welcome technological change as a harbinger of social progress.

—Rupert N. Urquhart

Labor Down Under

Throughout the West, the presence of a communist minority is being exploited by Roman Catholic clericals as an excuse for infiltrating fascist influence and control into national and international affairs under the guise of its being an antidote to communism. The following article reveals that this struggle for Catholic fascist control is raging in Australia and that the clericals are using much the same tactics which have proved so successful in North America.

THE crisis in the Australian Labor Party was precipitated, though not caused, by the Petrov affair. From the moment back in August when Dr. Herbert Evatt, leader of the Parliamentary Labor Party and former Deputy Prime Minister, appeared as counsel before the Royal Commission on Espionage the clouds began to gather. Dr. Evatt had been given leave to represent two members of his staff who had been named as sources of some trivial information in the notorious Document J.

Dr. Evatt submitted that the references to these officers were part of a disgraceful political conspiracy designed to damage him personally and the party which he leads. He named Petrov and Mrs. Petrov as the main conspirators and declared that his former press secretary, O'Sullivan, had been forced by blackmail to join the conspiracy. He charged the Security Service, or its senior officers, with improper conduct and with inefficiency for having failed to unmask the conspiracy.

Outside the commission's hearings Dr. Evatt asserted that the government had bungled the whole Petrov affair and that the commissioners, who are Supreme Court judges, had failed in their duty. Then on August 7 the commission withdrew its permission to Dr. Evatt to appear as counsel on the ground that he was unable to separate his responsibilities as the legal representative of his clients from his political interests and responsibilities. Five weeks later Dr. Evatt sought leave to reappear but was refused.

On October 26 the commission made an interim report in which it rejected Dr. Evatt's charges of

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political conspiracy as 'fantastic and wholly unsupported by any credible evidence.' Dr. Evatt repeated his public demands that the commission should be reconstituted and its findings reviewed since it had failed to act properly and justly.

Dr. Evatt's decision to appear as legal counsel caused widespread disquiet in Labor circles, since it was felt that his conduct of the case might be unpredictable and would inevitably have political implications for the party. When he persisted in his charge of conspiracy, the anxiety changed to near consternation among the moderates and to angry indignation among the right-wingers. The long and strong Labor tradition of party discipline and of loyalty to the party leader checked any move toward open revolt, but at the meeting of the Parliamentary Labor Party on August 26 a majority of members passed what was in effect, though not formally, a motion of censure on Dr. Evatt.

On September 9, after he had been excluded from the commission's hearings, Dr. Evatt defended his conduct in caucus, but the meeting was reported in the press to have ended 'in uproar.' Dr. Evatt then made a statement that the report of uproar was false and had been given to the press by 'paid informers' in his party. Since then he has openly charged a 'small minority' of the party with 'disloyal and subversive' action. This is a minority of right-wingers some of whom are active members of Catholic Action, an international organization under the control of the Roman Catholic hierarchy. The right-wingers, notably those from Victoria, have in turn publicly charged Dr. Evatt with unfitness for his post and contemptuous indifference to the will of the party.

Objections to his continued leadership are by no means confined to the right wing. In the caucus vote on October 20 Dr. Evatt mustered fifty-two supporters against the twenty-eight who favored a motion that all party officers be declared vacant. Among the twenty-eight were a number of Labor's most influential and moderate members, including Mr. Calwell, the party's deputy leader, who let it be known that he would be available for the leadership.

This party conflict has been

brewing for some years. Like all such conflicts it is partly a clash of personal ambitions, but it is more than that. At the end of the war Communists had won positions of power in some of the large unions and, through these unions, tried to influence Labor Party policy. They had very little if any success in the political, as distinct from the industrial, arena. In the big Communist-led coal strike of 1949, for instance, the Chifley Labor government took very firm measures, including the use of the army to mine coal, and the strike collapsed. The Labor Party has always stood for political and constitutional action and is strongly opposed to the Communist tactic. It has always been a moderate party, with a sense of political expediency and little more than an academic attachment to its declared Socialist objective. Yet its strength is built on the trade unions, and if the Communists had succeeded in extending or consolidating their hold on the unions, they would probably in time have been able to infiltrate the party.

This situation made politically conscious Catholics very apprehensive. Hence Catholic Action, or to be exact, a group within Catholic Action known as 'the Movement,' resolved to take the offensive. With great energy and skill they established anti-Communist cells, known as 'industrial groups,' inside a number of unions. These groups were well organized and disciplined and won the official blessing of the Australian Labor Party. During the past four years they have scored many successes and wrung the leadership of some key unions from Communists or left-wingers. Their successes have enlarged their ambitions, and they have tried increasingly to shape the Labor Party's political policy.

Moderate Labor and union leaders were glad enough to have the help of the 'industrial groups,' to suppress or expel the Communists, but they do not want to be suppressed or expelled themselves. Catholic Action is concerned not only with industrial but with broad political issues, in particular with Australia's foreign policy. It is utterly opposed to negotiated settlements with Communist governments and bitterly critical of British policy toward Communist China. It wants Australia to disassociate itself generally from the British policy

of 'appeasement' and identify itself with America in world affairs. Indeed, on many of the most important political issues Catholic Actionists seem to consider the moderate Labor leaders more dangerous than the Communists because they are more likely to mislead the majority of workers. These attitudes have recently provoked a widespread distrust of the industrial groups, though many, perhaps a majority, of their members are non-Catholics. In his campaign to discipline or expel the right-wing minority Dr. Evatt is no doubt relying on this reaction.

The great majority of the Labor Party are imbued with a strong sense of Australian nationalism and a belief in democratic procedure. They are equally opposed to Communist and clerical authoritarianism. Yet since the war the unity of the party has been threatened, first by a small Communist minority and more recently by a small clerical minority. The Communists and the Catholic Actionists have marked similarities, though their objectives are diametrically opposed. Both represent international movements, the one directed from Moscow, the other from Rome. Both adopt conspiratorial methods, for when they are identified they are isolated and repudiated by the majority. The propaganda techniques of the two groups are also similar, relying heavily on the slanted report and the personal smear.

It is important, of course, not to identify Catholic Action with membership in the Catholic faith or communism with industrial militance. It is probable that the majority of Catholics in Australia are out of sympathy with 'the Movement.' Catholic Action is a bitter critic of a number of moderate Catholic leaders, including Mr. Calwell.

The crisis in the Labor Party today is therefore on two levels. On the surface the question is whether Dr. Evatt shall retain the leadership. At the deeper level the question is whether it is possible in the present circumstances to remove Dr. Evatt without increasing the power of the Catholic Actionists who have led the attack on him. Probably the great majority of Labor Party members are unhappy about Dr. Evatt. His public behavior this year has often been eccentric and his motives obscure. His real weakness

stems not from the hostility of his political enemies but from the misgivings of his political friends. Yet Labor seems likely to decide that at the present moment party unity is more important than party leadership, that the first step is to discipline or expel the right-wing rebels. It will then be possible, some time before the next federal elections in 1956, to reconsider the question of leadership.

It would be wrong to try to explain the present paralysis of Labor leadership in terms of personalities or of disruption by subversive minorities. Labor is searching for a leader when it should be searching for a policy. For some time now it has had no effective or reasonably consistent alternative to the program of its opponents. In the elections of last May it was impossible to distinguish between the Labor and the Liberal approach to the very critical problems of foreign policy facing Australia in East Asia. On the domestic front about the only difference between the parties was that Labor tried to outbid the Liberals in promising increased payments to old-age pensioners. On one of the few questions of principle raised at the elections Mr. Calwell, the deputy leader, did declare that Labor was opposed to the private operation of television, but Dr. Evatt, a day or two before, had declared that Labor approved the private operation of television. It seems that Labor's great need today is to rethink and restate its distinctive objectives. **—W. Macmahon Ball**

★ OTTAWA.—Agricultural price support from 1946, when prices were instituted, to March 31 last, cost the Canadian taxpayer $80,163,658.

Nearly $69,000,000 of the total went to support hog and cattle prices because of the embargo on shipments of livestock and livestock products to the United States following the outbreak of foot-and-mouth disease in Saskatchewan in February, 1952.

Breakdown of price support by products: Hogs, $35,734,425; cattle, $33,408,941; apples, $6,106,725; potatoes, $2,036,175; butter, $1,606,742; skimmed milk, $677,404; dried white beans, $194,419; honey, $177,066; and eggs, $65,408. *—Canadian Press*

★ OTTAWA.—Canada harnessed more energy during 1954 than ever before in the unending search for new electrical power sources.

The year's increase was equivalent to nearly 12% of all power capacity previously developed.

New generating station funnelled 1,758,450 horsepower into power lines to keep Canada among the world's top power producers. *—Canadian Press*

Legislation or Operation

While the politicians waste their time in debate, the process of social operation is going on smoothly and unceasingly. It is operating because there is a non-political, functional organization which understands its equipment and methods.

WHEN you pick up your daily paper or magazine to find out what of importance is going on in the country and the world, your first glance will show you a series of headlines and sub-headings, highlighting or accentuating the details. When a cross-section of all the items in all the publications is examined, it will be found that the 'news' is more of individuals than of events. Furthermore, the names mentioned in most cases will be those of individuals in or closely related to politics. 'Senator Talklongly has stated that in his opinion we must adopt a get tough policy . . .' 'Speaking before the Board of Trade Mayor Willnilly voiced the hope that we would . . .' That is a fair sample of the front page news items in our papers, and upon reading the articles nothing of concrete, factual information is gleaned.

The election campaigns, in the last few years especially, have become gigantic circus-like activities in which all sorts of spectacular stunts are resorted to. It is interesting to note that in a government 'chosen by the people' the handful of candidates offered for their choice have been carefully picked by a group representing the biggest business concerns in the country and groomed for office by professional politicians who are concerned more than anything else with maintaining for themselves a condition wherein they will obtain a larger portion of society's production. Of course, the voters know nothing of the abilities of the respective candidates anyway, and vote according to what election ballyhoo has had the most effect upon their emotions. The election campaigns, conducted much the same as revival meetings, are becoming more and more national emotional binges, and the participants are literally 'drunk' from the bilge that is poured out upon the listeners. On the other hand, the fact

that the electors are unfamiliar with the candidates' respective abilities makes not one particle of difference, for talk as they like about different policies, platforms or methods, the politicians are not the responsible persons in our society.

In the slow moving, leisurely society of yesterday, before technology had made much impression on our method of operation, a political administration was probably as effective as any. In fact there was no other means of social control. For, be it a democracy, republic, or monarchy, ruled by one man or many, it was a political administration. The man or men in government made the rules which governed society and the individuals which comprised that society. If they made the rules in their favor it had little effect on the result, for it did not change the physical condition of hand-tool operation and scarcity of production. The peasant at his plow, the artisan at his forge and the housewife bending over her open hearth, could do little but accept their lot. A change in rules or laws, in government or individuals in government, could not alter their physical environment. As a result of the crude, hand-tool human energy method of production the most perplexing problem to be solved was how to divide the available production so as to keep the majority relatively complacent and at the same time stimulate more production by offering a reward for greater zeal. So the main reason for politicians was to act as manipulators, to make the rules governing the division of available goods and services to those in the community. It is not surprising therefore that the lot of the politician became a desirable one, for the maker of the rules would be foolish indeed if he made them in such a way they worked a hardship upon himself.

In these earlier days of human progress, when property rights were being wrested from the one individual in authority, the lord, king or maharaja, and land was being parceled out to someone who was in favor, it became necessary to maintain some system of protection. Each owner of land could not conveniently maintain a standing army for his personal use, so a system was devised whereby he could make use of the national control. Legislation was enacted protecting prop-

perty rights by law, and rather than attempt to exercise those laws by force it was necessary to instill in the citizens a feeling of respect for those restrictions.

So it was that representative government came into being, and the politician was presented as the people's representative in government. Because they had elected him themselves they felt they were therfore self-governed. So that, if they made the laws themselves through their elected members of parliament, they would be bound to respect and obey those laws.

In actuality we are governed by millions of dollars, not millions of people. It is not for altruistic purposes that the wealthiest men in the nation contribute tremendous sums of money toward the campaign funds of their favorite politician or political party. They are vitally concerned with having elected an individual who, for certain considerations, will see to it that legislation favorable to their interests is put on the statute books.

So we see that a politician and the whole political structure is designed to protect the interests of the wealthy minority, to intercede in their behalf and at the same time keep in good standing with the electors so as to maintain their confidence. Sort of keep his mind occupied by back slaps and profuse praise while the entrepreneur is feeling for his wallet.

The alarming part of it all is that, through political manipulation, in order to make and increase their fortunes these businessmen are obtaining concessions on the public domain. They are receiving permission to exploit the oil reserves, the timber tracts, the non-replaceable and valuable minerals. At the same time the politicians, as their emissaries, are running around all over the world blowing on little flames of dissent, doing their utmost to kindle them into full blown wars, so as to have a market for the things private enterprise produces from the resources of North America. If they cannot have a war they will create fear of war, so as to make a market for armaments by keeping the countries armed against one another.

Because of the possibility for more lucrative pay-off in government through the increasing interest of big business which is

looking for more and better concessions and contracts, more chiselers are trying to get in on the racket. As government becomes more bureaucratic with its investigation committees and subcommittees there are created more places in which to fit those individuals who were helpful in bringing a certain political party to office. These are not the civil servants who perform the many useful and necessary functions. They are rather the lesser politicians, or the political heelers, the hangers-on who are dealing in petty chicanery in order to help their party to power, with their own personal gain in mind.

While the politicians have been squabbling among themselves about the division of the spoils, while they have been debating and bickering in the parliaments and congress, passing hundreds and thousands of bills designed to regulate human affairs, our physical environment has gone on progressing and improving. The politician is still at it, drafting and piloting through the house bills governing the manner in which a scarcity will be divided.

At the same time the engineer, the scientist and the technologist have designed, built and improved engines and techniques which have moved the Continent of North America into an era of abundance. The engineer and technologist know how to operate the technology in such a manner as to produce an abundance for every citizen. The politician, aghast at what he sees, bends his efforts anew to the task of designing legislation which would curtail the abundance so the scarcity regulations will work.

Founded on the solid rock of physical phenomena, using measurable quantities of factual information, the technological method has changed the face of this Continent so that today it has little resemblance, in method of operation, to that agrarian economy of yesteryear when the politician's scarcity rules were valid. The farms are no longer isolated, self-contained units, operating individually to produce their every need. Today they are larger and more efficient, but they hold only a handful of humans, for the work is all done with gigantic machines. We find they are now connected by power line and telephone line to one another, and to the cities and towns. Instead of rutty dirt

roads there are smooth, hard surfaced highways and the mode of transportation is by one of the newer, faster automobiles. That pride of yesterday, the trotting horse and high wheeled buggy, is gone, along with the heart breaking and foot burning walking plow.

In the cities the transformation is just as marked, but the technological process is much more complex. What with a transportation system capable of moving a congested population from any one given point to another 24 hours a day with a minimum of delay. Then there are the telephone circuits, both interlocked and controlled.

Probably the most important part of the whole complicated array of equipment and operation is the power transmission system itself. From the source of supply, often hundreds of miles away in the wilderness, comes hundreds of thousands of volts of electrical energy to a substation. There it is stepped down in voltage and allocated to the various other stations and districts. Peak loads and slack periods must be controlled carefully, for this is dangerous stuff if it is not understood and operated according to design.

There are the water works and sewage disposal systems of course, as well as a myriad other smaller services and units. The whole is an organized and integrated unit of its components. It has to be organized and integrated or it won't work, and if it doesn't work, even for a short time, millions of people are in danger of imminent death. When you expand that into a national and then a Continental operation it becomes a gigantic problem.

Where then, in all this array of equipment, trained personnel and organized technique, does the politician fit? What is his job and where lies his responsibility? The answer is that he has no place, he does not fit in, and his responsibility is only in the minds of the people who vote for him.

When a legislative body is elected and installed in office they spend their time in the house on argument, debate, haggling and name calling. Each legislator has his pet project, seized upon because it will most likely affect the voters in his constituency and help insure his re-election. It usually has nothing to do with the

overall program of the nation, and he will often fight a bill proposed by another legislator even though it has more merit than his own. Besides, he doesn't go to many pains anymore to disguise the fact he is really working for his big boss, corporate enterprise. It was because of this boss that he was elected, since the voters need be appeased only for a short time prior to election. They are satisfied with the crumbs of old age pensions, social security and for the labor unions the right to squabble over wages with their employers once in a while.

While the politicians waste their time in the process of debating each bill that is presented, and taking up days and weeks of time, the process of social operation is going on smoothly and unceaslingly. The trains are on schedule, the buses are running, the factories, ships, hospitals, schools and all the rest of the functional sequences. They are not operating because parliament or congress is in session. They are operating because there is a non-political, functional organization of trained, capable and disciplined personnel which understands the equipment and methods with which it is working. Those trained persons who make up the personnel are responsible for its successful operation through 24 hours of every day in the year. If they at any time prove inadequate, or for some reason decide to quit in a body, we the people of this Continental area would face disaster. For they are the responsible citizens of North America.

We cannot legislate the trains to run, nor the water to flow through the mains of a great city. It would do no good to pass a law countermanding the Ohm's law of electrical energy. The physical laws cannot be tampered with, we can only use them, and operate according to them. First we must understand these physical laws however, and the politician does not. The engineer and scientist do, and as a result they have made it possible to supply us with an abundance. The politician is trying to legislate against this abundance, to decree that a scarcity is necessary and desirable. No matter how much we produce we will never enjoy an abundance as long as we have a political administration controlling the operation and interfering in the flow lines in order to make profit for someone.

We have designed a mechanism to turn the resources of North America into consumer goods by converting the various sources of extraneous energy through mechanical engines. A group of people who can do what we have done on this Continent won't find it difficult to bring the job to a conclusion by designing and operating the distributive mechanism so as to ensure that every one on the Continent has a sufficiency.

Technocracy has a blueprint for that design. You owe it to yourself and to your country to join with us. We invite you to do just that.

—Ed Broderick

★ VANCOUVER.—A University of British Columbia physics professor says the world's mounting population increase poses a greater problem than the threat of communism.

Dr. Grodon M. Shrum, head of the UBC's physics department, gave this warning in an address to the B.C. Society of Automotive Engineers.

Dr. Shrum said the public's 'naive and childlike faith that scientists can cope with the problem' of population increase is completely unjustified.

Scientists will be hard-pressed, he said, to provide the technology necessary to support the world's 60,000-a-day population increase while attempting at the same time to raise standards of living.

'Much more power and energy is going to be needed if we are going to keep up with population growth or increased living standards,' Dr. Shrum said.

—Canadian Press

★ VANCOUVER.—A top Canadian scientist says atomic power will be able to compete with coal in peacetime industry within five years.

Dr. Gordon Shrum, head of the University of British Columbia physics department, said the world's supply of natural gas and oil will last only 75 years.

'Atomic power for peacetime uses will be available in North America on a competitive basis with coal at $8 a ton within the next five years,' he told the Royal Astronomical Society recently.

'That doesn't mean atomic energy will be available for B.C. industries within that time,' he said. 'But it is not far away.

'The rate of consumption of gas and oil is rapidly increasing and reserves are limited.'

—Canadian Press

★ BERKELEY, Calif.—The United States must 'make thinking popular,' a university president declared. Too many persons have the attitude that having brains is fine but 'not very interesting,' said Dr. Lee A. Dubridge, head of the California Institute of Technology.

That is one main reason why not enough students are becoming scientists, at a time when more scientists and engineers are badly needed, he said.

The challenge is 'to make thinking popular, to elevate respect for the thoughtful men, the scholars, the intellectual.' One effect would be to induce more students to take up scientific careers, Dr. Dubridge told the American Association for the Advancement of Science.

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the membe. to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Whatever the future of Technocracy, one must fairly say that it is the only program of social and economic reconstruction which is in complete intellectual and technical accord with the age in which we live.

—Encyclopedia Americana

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TECHNOCRACY DIGEST

MAY '55

Technocracy Is No Myth

The New Industrial Revolution

The Future of America

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Revolution in Logging

Technology Dooms Small Farm

Japan Faces a Crisis

Through the Technoscope

No. 156

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THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

MAY, 1955 No. 156

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The Quarterly Survey

Jobless at Peak

Unemployment in Canada reached a postwar high this spring, amounting to at least 7.5 per cent of the nation's labor force.

Unplaced applicants with the National Employment Service numbered 632,913 on March 19, while the Dominion Bureau of Statistics sampling survey for the same date showed 401,000 out of jobs and seeking work.

The former category was 63,000 higher than a year ago and the latter figure was 80,000 more than last year.

Disturbing Facts

Leon Keyserling, former head of the President's economic council, points out that, with U.S. production approaching the high point of 1953, there are today 2,000,000 more Americans out of work than in that year. He compares the present to the period in the late twenties when 'production power outran consumption power' and unemployment gradually increased while stocks rose.

According to the **Wall Street Journal,** steel production in the last year rose by 11%—and employment in the industry actually fell by more than 40,000. Even more striking, the automobile industry is turning out almost half again as many cars as in 1954, with only five per cent more workers.

In other words, man-hours per unit of production are decreasing and this ancient technological trend is accelerating enormously.

End of the Race of Man?

Fitzpatrick in The St. Louis Post-Dispatch

Machines vs. Men

Due to automation, two men control the assembling of 1000 radios a day at one Chicago plant, in place of 200 formerly employed.

According to Roger W. Bolz, editor of **Automation** magazine, another automatized plant turns out 90,000 electric light bulbs an hour, with 230 employees. To reach this output by old-fashioned methods would require 75,000 workers, Bolz reported.

Canadian Power

A new study made by the federal department of northern affairs and national resources shows Canada as second only to the United States in the actual use of water power. Apart from Norway, a country of small population, Canada has harnessed more water power per capita than any other nation. And at the moment it is increasing its hydro-electric output at a record rate.

By the first of this year the nation's hydro plants could deliver 16,684,131 horse power, 1098 horse power per thousand of population or about one horse power per person. Little more than half a century ago, in 1900, the total hydro installation was only 177,323 horse power. During last year alone a record addition of 1,758,450 horse power was added to the former supply.

Grand Falls Project

Recently in the news has been the plan to develop the vast hydro-electric potential of Grand Falls, on the mighty Hamilton River, in Labrador, which is one and a half times as high as Niagara.

Having an estimated cost of $1,000,000,000, the scheme would be the largest hydro project in the world and would have the world's longest transmission line of 750 miles.

Technocracy has been pointing out the possibilities of this power site for many years. In July, 1939, Continental Headquarters of Technocracy Inc. said:

'Over 1,000,000 horsepower is continually running to waste over this one fall and no attempt has been made to harness it. Two other rivers within 25 miles leap over the same fault in the rocks. Power from these sources would be available in Tennessee or Mississippi.'

'Technocratic Architecture'

The April 4 issue of the New Republic carried an interesting article by U.S. architect Robert Woods Kennedy on 'Architecture and the New Package Style.' Kennedy introduces his subject as follows:

'Today, some 20 years after the apparent unlamented demise of Technocracy, that doctrine is only just coming into its own—in our architecture. Architects, in collaboration with numerous home owners, businesses and universities (not to mention the UN), are producing numberless permanent monuments to the theory. Harvard University's Graduate Student Dormitory, Illinois Tech's Campus, Lever Brothers New York headquarters, and Massachusetts Institute of Technology's new auditorium are only our premiere examples. Nearly all modern, and, oddly enough, many traditional houses, also exhibit symptoms of the same ideological disease.

'In retrospect, it seems inevitable that technocratic doctrine should have swept the building business. Science and engineering pervade every aspect of our lives. Their prestige is supreme. In such an age—so the theory goes—our economic resources, and thus our entire society, should be controlled by scientists and engineers. Architects as a group are particularly sensitive to the charms of such notions . . .'

The rest of the article carries numerous references to 'technocratic architecture,' a loose term that is just as erroneous as Kennedy's blithe assumption that Technocracy is dead.—**The Editor**

★ LONDON.—Prof. Frederick Soddy, one of Britain's atomic scientists, said here that hydrogen bomb experimental explosions 'are getting out of hand.' The blasts, he said, 'are fouling the air with radioactivity. It is nonsense to say it is harmless.'

Soddy, who shared in basic discoveries of atomic science and won the Nobel Prize for chemistry in 1921, said that radioactive gases can, and may, devastate the natural resources of the countryside and the mutation of genes in living people may be affected to the extent of jeopardizing the future fertility of the human race.

—*Associated Press*

★ OTTAWA.—The defence department has developed a method of making yarn that will produce fabrics five to 10 times as strong as ordinary material.

The new method of twisting fibres into yarn can be applied to any material—wool, cotton or synthetics. —*Canadian Press*

Technocracy Is No Myth

Wilton Ivie, of Continental Headquarters, Technocracy Inc., reviews the book 'Each Age Is a Dream: A Study in Ideologies' by L. H. Garstin. Published by Bouregy & Curl, Inc., New York, the 154 - *page volume was printed and bound in Canada. It is priced at* $2.50.

ALTHOUGH the preparation of the material for this book may be regarded as scholarly, the substance is, in itself, of mediocre significance. The author is sufficiently restrained in the presentation of any new idea that there is little likelihood of his getting into trouble with his bourgeois contemporaries. The primary reason that we undertake this review is the fact that Technocracy is chosen as one of the major examples of 'ideologies' on which the study is based. In attempting to discuss Technocracy, the author quickly gets beyond his depth. Consequently, one of our purposes is to rectify some of the twistings of the subject, made to force it into a pre-formulated mold that is supposed to be basic in the structure and physiology of all ideologies, including the historical dimension. The most satisfying feature of the book is its brevity.

We know nothing of the author other than what is contained in the blurb on the book cover. There it states that he is a Vice-Principal and Instructor in History and German in the Junior-Senior High School in Kimberley, British Columbia. He was born in Ireland, but early came to Canada, and was educated in Alberta and British Columbia. He is active in educational associations and has written some articles for educational journals. Other than that, he is interested in writing poetry and is a member of the local Lions Club. There is no indication that he has indulged in radical thinking; rather, the circumstantial evidence points to the contrary. We are not informed about his religious beliefs or his politics, if any. Although he lives in a community where there is an active Section of Technocracy, he seems to have looked elsewhere for his 'information' on the subject.

A fly-leaf of the book bears a quotation from R. M. MacIver, quote: 'Every society is held to-

gether by a myth-system, a complex of dominating thought-forms that determines and sustains all its activities. All social relations, the very texture of human society, are myth-born and myth-sustained. . . .' One soon suspects that the author has adopted a myth-system of his own for which he is attempting to build up a logical case; but this myth-system is not openly revealed until the last chapter. The sinew of his rhetoric is composed of philosophical logic rather than scientific exposition, with the result that his thesis, although seemingly plausible to the reader, is no stronger than the logic which sustains it.

In the preparation of his universal mold, Garstin begins by stating that all ideologies have four basic elements: (1) A philosophy of history; (2) An analysis of man's present stage in relation to that philosophy; (3) A projection of the analysis into the future; and (4) A theory of action necessary to hasten the realization of that projection. An ideology provides the essentials for a complete way of life, including: economic welfare; an explanation of things; and status for the individual. Ideologies are characterized by certain principles, among them: (a) Intolerance of competing ideologies; (b) Formulation of ideological propositions in abstract terms which are subject to wide interpretation; (c) Custodianship of the ideology in an hierarchy of official philosophers; and (d) Institutionalization in an organization which seeks an expansion of membership and supporters.

The author refers to 'the medieval Church' as an example of religious ideology. He restricts the history and perspective of the Church to the Middle Ages and speaks of it in the past tense, neglecting to name it or to mention that the same Church still persists without significant change; further, he describes it in the kindliest of terms. Whether this attitude is derived from his having been born in Ireland or is a studious avoidance of entering into religious controversy is not clear. (It is obvious that he evades mention of modern religious ideologies except in the vaguest of terms.)

In friendly language, Garstin states or implies the following characteristics of the Church, which are supposed to make it

conform to his concept of an ideology: He points out that the medieval Church was the custodian of medieval Christianity and that it 'was' completely intolerant of any other ideology (omitting any reference to the sadistic features of this intolerance). Insofar as the mass membership was concerned, there was no provision made for their general welfare; rather, there was an efficiently organized and severely enforced system of 'take.' The Church hierarchy lived well; the public lived in circumstances of utmost misery and poverty. The stated goal of the Church was to prepare its members for Life Eternal in a mythical spook world, in which the poor and downtrodden of this life were to receive special glory, status, and happiness—all stated in vague and abstract terms, particularly with reference to specifications. The Church used every conceivable means to expand its membership and influence, including ritualism, propagation of superstitious fear, propaganda, torture, and force of arms. The goals were to be realized somewhere beyond this life, and there was no way for the member to check on the validity of the payoff.

The second example presented is the ideology of communism. Garstin explains that communism fits well into the ideological pattern which he has postulated. Communism is based on a historical philosophy of a class struggle; and the 'inevitable' outcome of this struggle is the triumph of the proletariat over the bourgeoisie, mainly through the disintegration of the bourgeois class as a consequence of internal conflicts and inadequacies. In a communist society, the workers will achieve a favored status. The objectives of communism are secular, dealing with the affairs of this life. Among the eventual achievements promised the members are economic abundance and the end of degradation for the worker, through the principle of equality for all. The ideology has become institutionalized in the Communist Party, particularly as it applies to Russia. The Party is intolerant to all opposing philosophies as well as departures from the Party Line. As is usual with human organization, the Communist Party has certain trappings, among them the symbol of

the hammer and sickle, the clenched fist salute, party songs, and membership cards. Its goals are to be achieved through collective ownership and control, with the state dominant over the individual at first, but with a progressive disintegration of the state as the goals of communism are approached.

The abstractions of communism include the following propositions, according to Garstin: In its theory of values, human labor is the measurement of all values; that is, goods and services are to be valued in accordance with the amount of human labor involved in their production. But, according to the communists, labor is being exploited by a wealthy ownership class for private profit; hence, the proletariat is fully justified in taking over the means of production by revolutionary means and in operating it for the common welfare as opposed to private gain. In speaking of communism, the author is more 'objective' than when speaking of medieval Christianity, exhibiting less personal sympathy for it and less kindness in his choice of words.

The third example mentioned is Technocracy. Here, the author wallows around in a fog—unless one would go so far as to accuse him of deliberate misrepresentation. First of all, he insists that Technocracy must have a 'progenitor' and in seeking such a progenitor he comes up with Thorstein Veblen's 'Theory of the Leisure Class.' He is generous in the 'dropping' of Veblenian phrases, evidently to assure the reader that he is familiar with the works of this 'progenitor of the philosophy' of Technocracy. This basing of Technocracy on the works of Thorstein Veblen serves two obvious purposes: (1) The writings of Veblen are more comprehensible to the philosophical mind than, say, the writings of Willard Gibbs. (2) It is necessary to adopt this myth in order to fit Technocracy into the author's preordained pattern of ideological principles. Garstin regards Veblen and Stuart Chase as the founding philosophers of Technocracy and Howard Scott as its present custodian. But, let us note here, neither Veblen nor Chase were ever members of Technocracy after it was organized under that name. Most of what Veblen wrote, including his 'Theory of

the Leisure Class,' was published before he had contact with the idea of Technocracy as an associate member of the Technical Alliance. He died before Technocracy was formally organized. For a while Stuart Chase was associated with the Technical Alliance, also, during which time he learned to analyze the economic problem of North America. But for more than thirty years, he has been writing for other interests and is doing his best to forget that he ever had been 'contaminated' with Technocracy.

In his discussion of Technocracy, Garstin not only shows ignorance of the substance of the idea but he reveals a personal antipathy toward it. This is the first clear hint that he has a myth of his own to mouth later on, and that he considers Technocracy to be a viable and threatening 'competitor.'

Next, a chapter is devoted to a study of primitive ideologies, in which an attempt is made to force a few chosen examples into the pattern mold of the author.

The Ideology which the author reserves for the windup, and about which he becomes long-winded and enthusiastic is 'Individual Industrialism,' under which he synonymizes Capitalism and Free Enterprise. It is essentially equivalent to Business Enterprise. Here, we begin to see where his sympathies and myth-culture are turning; yet it is evident that he is not quite satisfied with Individual Industrialism in its pure form. Garstin traces the beginnings of this ideology back to the period of the Renaissance and considers its rise as an antidote for the stagnation of the Middle Ages. Commerce and private profit were the inspiring motivations. The hostility of competing ideologies forced it to form itself into a cult. According to the author's analysis, the philosophy of Individual Industrialism is concerned mainly with the production and merchandizing of salable goods and services.

In the view of its promoters, the custodianship of business enterprise should lie outside of the National State; however the latter should serve as its protector but observe a laissez faire attitude during those times when the System is not threatened. The greatest internal competition is that of the working force; so Individual Industrialism has con-

sistently fought against any organization or welfare of the workers. Business enterprise has consistently enlisted the support of the National State to hold Labor in line. The immediate ideological competitor it fears most is collective industrialism or Socialism; and, against this threat, business enterprise again enlists the support of the State government. The success it has had in manipulating the State in its own behalf is well illustrated by its history in the United States. The devices used by the State in support of business enterprise are many, ranging from import tariffs to loyalty oaths for workers. Business enterprise does not have a symbol of its own, but waves the National Flag as its symbol, thus promoting the impression that patriotism and business enterprise are one and the same thing. Along with this goes the slogan, 'What is good for business is good for the country.' Among its chief prophets were Adam Smith and John Stuart Mill.

Today, Individual Industrialism has enveloped Western civilization and tends to define the good life in terms of material success. Among its propaganda devices are such false-fronts as 'Freedom for the Individual,' 'Democracy,' 'Freedom of Opportunity.'

After inadvertently revealing that his sympathies are closest to Individual Industrialism, the author proceeds carefully and with documentation to show that the roots of this ideology were firmly established in early Christianity and even penetrate into earlier Judaism. He points out that the essential distinguishing characteristic of Individual Industrialism is the emphasis on the worth and freedom of the individual. He uses a couple of brief quotes from American politicians to tie it in with modern republican politics.

To prove that he is being truly objective in his study, the author brushes over communism with the same broom he has used on business enterprise — to indicate that it, too, has roots in what has gone before as well as adaptations to modern developments. Here his interest is less warm and his understanding of the subject quite hazy. For example, he treats the 'worship of industrialization' in Russia as a natural outgrowth of the communist ideology. Actu-

ally, it takes a long stretch of theorizing to reconcile communist philosophy, based on the value of human labor, with machine technology, which repudiates human labor as a social value. (Technocracy has long contended that, should Russia continue to mechanize its operations, the day will come when it will have to repudiate its communist philosophy, for the two are irreconcilable.)

An attempt is made to show how ideologies are influenced by and derive elements from other contemporary ideologies with which they come in contact. The author shows that Christianity absorbed much from Judaism and that Mohammedanism absorbed much from Christianity; likewise, that communism has been greatly modified by extraneous influences, such as Individual Industrialism. But he can find no way in which Individual Industrialism has absorbed anything from the ideologies with which it has come in contact; rather, he finds that it can exist side-by-side with Chinese Confucianism, Indian Hinduism, and European Christianity without becoming contaminated by them. Individual Industrialism penetrated into Asia and other places, but it made no compromise with the prevailing ideologies in those places. Rather, it insisted on total acceptance of itself 'as is.'

Garstin mentions that business enterprise has passed its peak and, now that it is on the wane, it is 'threatened by ideologies like communism and Technocracy.'

All ideologies are faced with the possibility of schisms. A schism is defined as a faction that accepts one or more of the basic principles of the parent ideology but rejects certain other basic principles. He gives a number of examples from the history of religious ideologies. The principal 'heresy' of Individual Industrialism is that of modified state control as contrasted with laissez faire—that is, a limited welfare state.

In a chapter dealing with the social position of non-dominant ideologies, the author points out that the good things of life are largely controlled by the leaders of the dominant ideology and that the great majority of the people are left in a depressed state. The tendency is for the followers of non-dominant ideologies to repudiate wealth, the wealthy, and the

power of wealth and to glorify poverty, work and the oppressed masses. In this way, early Christianity gained a following. Communism now appeals to the downtrodden in a similar manner. He tries to fit Technocracy into this mold, with pitiful success; for, Technocracy does not seek to invert values, nor to glorify work and poverty as the sub-dominant philosophical ideologies have done.

Garstin points out that Christianity, communism, and other philosophies, when they do rise to a position of dominance, are incapable of instituting the ideals they have cherished and advocated. Thus, Christianity has never been able to provide a 'heaven on earth,' even though it has had complete dominance over every phase of social life over wide areas. Communism, when it rose to dominance, was not able to produce a classless society from oppressions by the State. (As Technocracy has often stated, philosophical ideologies may have idealistic objectives, but they lack the technical know-how of turning them into reality. The only social program that would have a chance of instituting its objectives would be one based on science and technology and, thereby, be 'in complete intellectual and technical accord with the age in which we live.')

In discussing the reasons why dominant ideologies decay and give way to newer ideologies, the author presents several causative factors. First, the institutions which carry the ideologies are not able to pay off on their promises, as in the case of medieval Christianity. Second, they tend to become crystalized into a static form, incapable of keeping up with changes in social forces; and, here again, he refers to medieval Christianity which could not stand up under the intellectual appeal of experimentation introduced by the pioneers of science on one hand and the profit incentives of an expanding commerce on the other hand. Thirdly, the ruling hierarchy tends to take the short-term, ephemeral view, assuming that the institutions and trappings of the ideology as well as security in a position of power for its leaders are of paramount importance. So, as the dynamic spirit of the ideology fades into the background, the mass supporters begin to turn elsewhere for their

inspirations. Fourthly, a given group, like the individual, appears capable of presiding over only one major change and, once successful, becomes incapable of preparing for the next change.

In discussing the factors relating to the acceptance of religious versus secular ideologies, the author thinks that religious ideologies have their best chance where the people are illiterate, ignorant, and fearful of the unknown; where control over the physical environment is limited. But, as soon as the people become literate, acquire an understanding of their physical environment and develop a technique for controlling it, and start thinking of phenomena in terms of natural laws, religious ideologies give way to secular ideologies.

Among the factors which influence the acceptance of one competing ideology over another is that of the time the ideology has been in existence, according to Garstin. Thus, socialism allegedly has an advantage over Social Credit and Technocracy since socialism has had a much longer time to permeate into the thinking of the people. Then, he goes into a detailed analysis of the various recent political experiments in the provinces of Canada, with particular reference to the factors that influenced their acceptance or rejection.

We are shown how Individual Industrialism is now in a period of transition, veering away from a strictly laissez faire status toward more and more governmental control. Production and trade are steadily coming under greater regulation and the open market is fading along with competition. Agriculture and industry are doing many things to circumvent and thwart free competition, among them the cartelization of production and markets. Individual Industrialism, wherein the individual owned and managed his business enterprise, is giving way to corporate industrialism, wherein the owners are little more than stockholders who sit back and wait for the dividends to flow and the enterprises are operated by hired managers.

Labor and the professions are organizing along similar lines. Labor unions are evading the principle of competitive selling of man-hours on the open market; rather, they are organizing to demand set wages. The professions

are organizing to charge set fees. Further, both labor and the professions are organizing to achieve complete control over the members of their respective groups, to limit the number of members and to specify the kind of services to be rendered as well as the prices charged for the same.

On the whole, enterprise is drifting into an up-to-date version of the medieval guild system.

In politics, the social forces have become so varied and complex that few, if any, individuals can comprehend what is going on. Hence, the tendency among politicians is to rely more and more on 'leadership' from above whether in the form of individual Leaders or Party Lines. The basic essential of representative government—a well-informed public—is becoming impotent. This is largely influenced by the fact that the sources of information—press, radio, cinema—are dominated by financial giants who control the information that is passed on to the public, hence they are biased in favor of one dominant point of view.

In the political field, economic pressure groups— labor, business, professional, agricultural, cultural (and clerical) — are influencing legislation to a growing extent. Also, more and more of the legislative functions are being taken over by agencies of the Executive Branch.

Garstin fears that the trustees of the ideology of Individual Industrialism are suffering from the hardening of their ideological arteries; that, in their resistance to any kind of change, they are hysterically attacking all liberal and progressive modifications of the ideology as well as the spread of the 'genuinely evil force' of collectivism. In this connection, he mentions the venomous renunciations of the mild changes introduced by the Roosevelt New Deal.

Now that he has pointed out the historical trends and the current weaknesses of Individual Industrialism, the author is ready to present his own schizmatic 'synthesis' for the future.

The social control—the ideological mythology — of the future, Garstin concludes, must be deeply involved in economic planning; that is, there shall be a marriage of business and political interests. He insists that the outer forms of representative government should be preserved—universal suffrage,

the ballot box, the party system—if for no other reason than to beguile the people into thinking that they hold a check-rein on any possible rise of despotism. However, he believes that economic groupings should be given equal representation in government along with geographical groupings. He believes that there will be increased State control over property, particularly property involved in large-scale industrial operations; but that, eventually, this control will pass into semi-cooperatives ('worker-controlled institutions' he calls them) internally controlled by the personnel in them but responsible socially to the national legislature. There must be an inter-regnum period of strong centralized state control of politico-economic matters (a dictatorship?), because the people are not yet ready for democratic responsibility. This last situation he attributes to the long-term campaign in educational and informational circles to keep the people ignorant and misinformed about what is going on. Eventually, the author hopes, enough people will become sufficiently informed to administer social affairs on a more truly representative basis. (This argument sounds like something taken out of the handbook of Soviet Communism.)

Although the author states that, for the future society, 'the emphasis . . . on materialism will be rejected,' he carefully avoids any overt mention of a religious moral order. However, earlier in the book, he has carefully delineated the close relationship between 'Individual Industrialism' and Christianity. One is left to assume that he would welcome a modified medieval Christianity into his synthesis as the third major element. The omission of direct mention is probably intentional, in order to avoid religious controversy under circumstances where no one Church organization is dominant. He maintains that the eventual outcome will be social stability and equilibrium and that this will derive in large measure from a softening of the harsher features of Individual Industrialism in favor of more economic welfare for the masses of the people.

The most appropriate name we can give to Garstin's dream for the future is the Myth of a Benevolent Fascism. It has all the basic elements of fascism—the

consolidation of economic, political, and ecclesiastical forces for the stabilization and preservation of a status quo. The full realization of this 'happy state' is not foreseen earlier than the turn of the century (probably even later) because of the deep-seated conflicts and tensions that now exist in the world between the ideologies of Private Enterprise and Collectivist enterprise. This places the 'millenium' far enough into the future that the author can discuss with confidence the abstractions of his ideology without the fear of being embarrassed by historical adversity.

The book is written from the viewpoint of one who has specialized in a study of political and economic philosophy but who obviously has neglected scientific and technical fields of study. Although the author makes passing references to technology and industrialism at various times, he never places science or technology in the forefront of social forces, always relegating them to background positions. He appears unaware of the rapid acceleration that is in effect with respect to the movement of social events. He is well-versed in the use of words and logic; and he is at his best when analyzing present-day political and economic practices. The greatest weakness of his discussion is the ignorance of scientific and technological matters with which he enters it. He also displays a very faulty knowledge of Technocracy considering the prominence he attempts to give it.

Among the overt mis-statements about Technocracy is this one: 'A third element determining the content of non-dominant ideologies is the emphasis on the value of work . . . Even the ideology of Technocracy scorns those whom it considers parasites on the body economic and gives the engineer, technician and worker the sole right to existence.' Technocracy has never praised work (human toil) and has never denied the right of any citizen of the North American Continent to existence and economic well-being.

Much of Garstin's misunderstanding of Technocracy (if it is merely misunderstanding) undoubtedly stems from his lack of knowledge and appreciation for the technological approach to social problems. Hence, he finds it easier to turn to the semi-philosophical writings of Thorstein Veb-

len for the 'roots' of Technocracy than to the energy theories and interpretations of Willard Gibbs, where the real roots derived nourishment. Likewise, his reference to Stuart Chase as one of the major custodians of the Technocracy ideology evidently fits his philosophical astigmatism regarding it—better than an analysis of the works of the Chief Engineer of the Technical Alliance, Howard Scott, under whom both Veblen and Chase were temporary participants in the social studies which later developed into Technocracy.

In a pre-technological age, social ideologies were essentially equal in their capabilities of presiding over social affairs, whether clerical or secular in their emphasis. Since there was a general ignorance of nature and the forces of nature, consequently a very limited control over the forces of nature, social concepts had to be founded in philosophy. Philosophy may be defined as a mythical interpretation of the unknown. Since philosophy is derived from ignorance and guesswork, there can be as many different philosophies as there are people to philosophize. Science and technology, based as they are on reality, introduce a technique into society that is alien to philosophy, so that it is a misnomer to refer to them as ideologies.

Technocracy, being founded on science and technology, does not philosophize, either in the economic, governmental, or ethical fields. It analyzes the physical factors operating in society and projects their effects into the next most probable social state on the North American Continent. (The effects on other continents would not be the same, because of differences in the physical factors, although they might be somewhat parallel.) Consequently, Technocracy has no fixed creed of how things 'ought to be' or how they ought to be arrived at. Thus, Technocracy is a technological blue-print for the social mechanism of the Continent, with the ideological elements reduced to to a minimum.

The fact that Technocracy is supported by an organization, as a vehicle for the promulgation of the idea, does not make it an ideology. Neither does the fact that Technocracy Inc. operates along the lines of many other organizations—that is, have study

groups, symbols, dues, slogans, regulation dress, etc. — indicate that the objectives are similar in kind or degree to those of any other organization. It is quite probable that, should a group of people decide to organize to promote the myth that the planet Venus is inhabited by man-shaped vegetables, they would have similar organizational structure and trappings under the Price System.

Technocracy Inc. differs from most other organizations in that it does not have an assumption of power theory. It does not seek to take over the society, place its personnel in positions of power, and operate the area according to its ideas. In this, it differs from such organizations as the Communist Party, the Roman Catholic Church, the nudists, the vegetarians, the single-taxers, and many others. Technocracy must be based upon, and be an extension of, a highly-developed technological complex. It has no illusion about being able to rise to full bloom from the ruins of chaos—like an orchid on a dung heap. If North America's technology should be destroyed (as some anti-materialists would like), Technocracy would be given a serious if not fatal set-back. It could 'come back' only with a new technological build-up.

Most social ideologies promise a future of stability and tranquillity, based on a universal general welfare. Many ideologies have been in dominant control over wide areas—Roman Law, Catholic clericalism, Tory republicanism, Private Enterprise, Communism—but their ideals all proved to be myths when it came time to translate them into reality. The recent economic advances recorded under Private Enterprise and Soviet Communism have nothing to do with the respective ideologies. They are the direct outgrowth of the application of technology to social problems. Likewise, Japan was able to challenge the Western and Eastern worlds combined, not because of its Shinto fascist ideology, but, because of its adoption of the technological technique. Japan was defeated, not by Democracy, Communism, or Private Enterprise, but, by a superior technology.

When technological growth passes a certain stage of development, it necessarily takes command of the social situation, and

all philosophical ideologies are rendered impotent. It is now obvious that only technology provides the pattern for a long-term social structure blessed with stability and equilibrium. Thus, Technocracy is able to demonstrate in irrefutable terms the capabilities of the Technate to provide abundance, freedom from toil, security, and enduring social stability and equilibrium to the citizens of the area where it is applied. On the other hand, technology spells the doom of all philosophical ideologies, whether fascist, communist, socialist, democratic, or the neo-fascism of L.H. Garstin. **—Wilton Ivie, CHQ**

★ TORONTO.—An unemployed Toronto laborer sat in jail recently so his wife and five children could eat.

Andrew Boyle, 42, pawned everything he could to buy his family food which they lived on for two weeks in an old car. He could breathe a little easier when Scarborough police locked him up here.

The idea came from Reeve Oliver Crockford, who told Boyle his wife could draw a mother's allowance as long as he was in jail on a vagrancy charge.

Crockford also blasted the city's charity organizations after the jobless laborer told him he had applied at 15 welfare organizations without success.

Boyle's family lived two weeks in his old car until they found a shack in the Highland Creek valley without a door or windowpanes. Nearby residents telephoned police and the story came out.

Boyle, who has held scores of jobs in his life, says he'll take any work he can find.

'I don't want charity,' he said. 'All I want is a job and a roof over my head.'

—British United Press

★ CLEVELAND.—CIO president Walter Reuther said here that danger signs of a new great depression are showing in the American economy.

The union leader said that just as in the years leading up to the 1929 depression, production, employment, wages and farm income all declined between 1953 and 1954, yet profits have increased nearly 25 per cent.

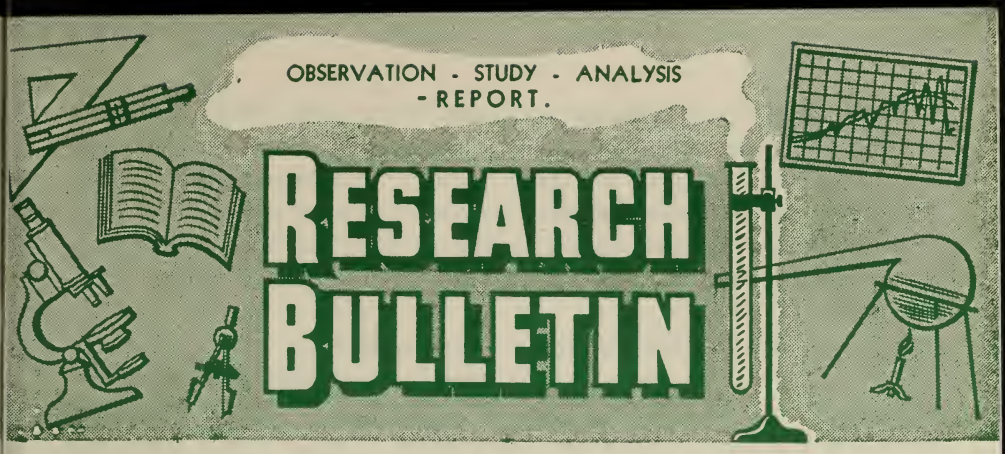
'In the early 1920s,' Reuther said, 'the economic depression was born during a period when the people who had too little got less and less, and the people who had too much got more and more. Now the same thing is happening again.'

—Associated Press

★ WASHINGTON.—A Harvard economist says the United States may be in the early stages of a boom-and-bust cycle that could end in a 1929-style crash.

John K. Galbraith told the Senate banking committee that there are 'formidable safeguards' against another such crash. But he spoke of 'resemblances' between conditions in the late 1920s and today that 'are certainly interesting and possibly disturbing.'

Galbraith saw such danger signs in the current stock boom as increased credit buying, an influx of newcomers into the market and a growing gap between the sale price and the book value of shares. *—Associated Press*



MAY, 1955 *Compiled by Editorial Staff* No. 101

The New Industrial Revolution

A NEW industrial revolution is under way in America. Its name is 'automation.'

Automation is a new word. It was coined by engineers of the Ford Motor Company. It means something more than mechanization, more than the introduction of new or improved machines.

Railmen have been experiencing mechanization in nearly every craft for many years. In many cases it has meant easier, safer work. But look what it has done to jobs: In the period of 1921-25, to move an average of 372 billion revenue ton-miles of freight per year, the nation's Class I carriers employed an average of 1,128,000 people. In 1953, to move 606 billion ton-miles of freight, Class I carriers required only 1,296,000 people. Thirty per cent fewer workers moved 60 per cent more freight.

Now a start has been made on this further new technique called automation. One example on the rails is in automatic traffic control. One industry after another, in fact, is pushing toward automation. And in every case the workers are vitally affected.

The essence of automation is this: Electronic controls run the machines, replacing human brains and hands. In the first industrial revolution, beginning in the 18th century, machines replaced hand tools. Mechanical power replaced human or animal power. The locomotive and the gasoline engine took over from the horse-drawn cart or carriage. But always a human mind and human hands ran the machines.

In automation, the electronic brain takes over. It runs the machines. The human element is pushed back a huge step further — limited to a handful of engineers or technicians watching a panel of electrical indicators. That's why automation is called a new industrial revolution. Here are some examples:

A Ford engine plant near Cleveland uses automation to control the machining of engine blocks 'without the touch of a human hand.' Forty-one machinists—with automation—do the former work of 117, and in one-third less time.

Another automation setup for automobile engines, as advertised by its manufacturer, performs 555 different operations with only one man at the controls. Altogether, in 1954 alone, the big auto companies spent hundreds of millions of dollars bringing automation to their plants.

Radios are assembled at the rate of 1,000 a day in Raytheon Manufacturing Corporation's Chicago plant with only two men at the controls, instead of 200 formerly needed.

The Army has built a completely automatic T N T factory at Joliet, Ill. Manufacture of rifle grenades, in another plant, is performed by nine robot machines operated by nine men, as against the 27 skilled machinists formerly required.

Westinghouse Electric has a new refrigerator and freezer plant where component parts travel over 27 miles of conveyors, through automatic enamelling and assembling devices—and in the end go to an automatic crating machine. General Electric is building a similar plant.

A company making steel pipe, the **Milwaukee Journal** reports, has a 'completely automatic operation,' in which 'steel enters a roll-

ing mill in the form of billets, is converted to sheet steel of specified thickness, and in a continuous process line then is formed, butt welded, cut to length and threaded to emerge as finished pipe.'

Automation has gone particularly far in the telephone industry. There, the number of telephones handled per employee has nearly doubled in 30 years. And now, according to **Fortune** magazine, the phone company is 'ready to set up inter-region and even coast-to-coast dialing, with automatic accounting and billing machines replacing operators on tabulations.'

Oil refining is another almost completely automatic industry. 'A few skilled workers,' as **Time** magazine puts it, 'sit at a master-control panel and guide the crude oil through many intricate steps to high-octane gasoline or any one of a dozen other major petroleum products.'

In the aircraft industry also, the **Wall Street Journal** reports, 'automation is playing an outstanding role.' One big firm has automatized the cutting of plane wing panels, eliminating 'literally hundreds of separate tasks.' The whole job is controlled by 'an electronic mechanism that resembles a telephone system and enables the operator to "dial" his specifications.' Another example is 'an electronic, push-button device that cuts, stamps and measures electric wire all at once, eliminating five time-consuming manual tasks.'

Even in the phonograph record industry 16 new machines, operated by four dial-watching men, turn out five times as many records as 250 men would normally produce. Even more extraordinary, the Carbide and Carbon Chemicals Company claims to have in operation the 'world's first robot coal miner,' turning bituminous coal into gases underground.

In 'white collar' clerical operations, also, automation is proceeding at a fast pace. One firm cuts its clerical staff a third by employing complicated electronic machines. Another cut its staff 39 per cent, while boosting volume of work handled.

According to the **New York Journal of Commerce**, 'automation in the field of retailing has developed so rapidly that it has become a larger factor in distribution than even the retail trade itself gener-

ally realizes. Major retailers are utilizing electronic computers to reduce costs and operate more efficiently.

'These computers,' the **Journal of Commerce** continued, 'are currently finding their greatest use in simplifying procedures of stock control, payroll, billing, inventory, forecasting and general accounting.' In one case, 'where it once took 60 tally clerks to supply week-old statistics on sales, now 10 operators provide daily reports.' The implications are obvious for all workers engaged in clerical work.

Union leaders, in the auto industry and elsewhere, are increasingly concerned about the effect of automation in throwing people out of jobs. An anecdote illustrates the point.

An auto company official was showing Walter Reuther, Auto Workers' chief, through the firm's new automatic factory. Pointing to the long line of electronically-controlled machines, the official asked Reuther: 'How are you going to collect union dues from these guys?' Retorted Reuther: 'How are you going to get them to buy your cars?'

—Machinists Monthly Journal

Technology Dooms Small Farm

WASHINGTON. — Mechanization and technology have changed agriculture so swiftly in recent years that perhaps a third of the nation's 5,425,000 farms are not needed to supply domestic and export needs.

Census Bureau reports indicated that in 1950, nearly all the farm products moving to market were produced by 55 percent of the farms. The other 45 per cent produced only about five per cent of the market supply. In the latter class were mostly small farms.

The production advantage of the larger farms is even greater now than five years ago. The extent of this advantage will be shown by a new agricultural census being taken this year.

Science and research have moved fast since the war and both are being encouraged by Secretary of Agriculture Benson. Incidentally,

in a report on farm technology, issued a few years ago, the Department likened it to the magic porridge mill in an old story. The boy who had the mill couldn't stop it. Soon his whole village was choked with gruel.

Science keeps learning more about soils. Atomic research promises to open vast new possibilities. Engineers perfect more labor-saving machinery. New ways to preserve foods come from laboratories. Plant innovations, ways to control insects and diseases, more knowledge of breeding, and countless other developments bring higher and higher productivity.

The tractor, the truck, the harvesting combine, and the automobile have eliminated need for literally millions of men in agriculture.

What's more, no end is in sight. In a late research bulletin, the Agriculture Department said 'research hasn't run its course.'

This increased efficiency is reflected in many ways. In 1900, for example, each person in agriculture produced, on the average, enough to feed and clothe 6.95 persons. By 1950 this productivity had grown to 10.81. By 1953, it had climbed to 17.86.

Because the increase in efficiency was greater than the growth in the population and in export markets, it has forced many out of farming. Farm population has declined a third in 20 years. Likewise, the number of farms has decreased, although the total farm acreage has gone up. There were 6,814,000 farms in 1935. Today there are 5,425,000.

This squeezing out process is putting land into fewer hands. In 1940, for example, farms averaged 174 acres. By 1950, the acreage had climbed to 215. This year's farm census is expected to show an even larger average size.

Even if scientists went on a long holiday, further sharp increases in efficiency could be made because a goodly share of the medium and large farms have not yet caught up with latest in science.

Take corn, the major raw material for meat, poultry and dairy products. All the corn now needed could be grown on perhaps 60 million acres instead of the present 80 millions if all farmers used the modern practices of the Mid-Western corn belt. **—Associated Press**

Revolution in Logging

LOGGING by television, lumber production by radioactive waves and control of tree color by injections are all part of the future in the forest industries, states E. W. Kenney, research and education director of the International Woodworkers of America (CIO-CCL).

Timber stands now inaccessible in rugged terrain common to British Columbia and other West Coast areas, will be felled with the help of a hypodermic needle and a helicopter.

Mr. Kenney made his report on the possible economic future in an address covering 'automation,' a term denoting growing productivity per man-hour, to the IWA recent convention.

He said that in the southern United States a timber stand is being injected with chemicals at the sapling stage so that when a tree reaches maturity it will be any of many colors.

Some trees cut before maturity are showing the experiment as satisfactory. If the experiment is wholly successful the results could mean that wood can be cut and used in house construction without the necessity of painting for color.

Mr. Kenney foresees cutting of lumber in mills by radioactive waves. Saws will be things of the past. The waves will leave an absolutely smooth cut that will need no planing and will leave no sawdust.

Tree vitamins will be impregnated at the sapling stage and Douglas fir trees will grow to maturity in 60 years rather than 100 years.

Helicopters, with the use of television, will be employed in previously inaccessible terrain. Loggers will be fewer in number.

A radioactive ingredient will be injected into the base of the tree to kill the roots out to a certain level. Then a machine will dig around the roots.

The helicopter, equipped with television and other instruments, will hover overhead, drop clamps onto the tree and remove it to a mill-factory.

The tree roots will be utilized for chemicals, and trimmings of the tree, now waste, will be utilized in such things as plastic clothes.

Many of these advances will come into common use within perhaps 10 years, Mr. Kenney predicted.

Foods, automobiles, homes, clothes, and the entire mode of living will undergo a tremendous change within 10 to 25 years, Mr. Kenney believes. **—Bill Mavor in Victoria Daily Colonist**

★ WASHINGTON.—The wonderful world of the atom lies close at hand. In that world . . .

When your automobile frets and sputters, you will have the motor 'X-rayed' instead of torn down. Pictures of its insides, taken with Cobalt 60, will locate the trouble.

Your home, of course, will be lighted with energy taken from a nuclear reactor. And you will ride on trains and ships powered by the atom.

It will purify sea water and carry that water across mountains to the desert.

In factories, radioactive bracelets will guard the worker against mangling by dangerous machines. If the jaws of the machine come too close to his hand, radiation from the bracelets agitates a geiger counter. It instantly stops the machine.

Buck Rogers stuff ?

No, indeed. Some of these things already are here. Others—many others—are beyond the experimental stage. *—Associated Press*

★ NEW YORK.—Seven years from now half of the electronics business will be devoted to devices that do not now exist, according to David Sarnoff, chairman of the board of the Radio Corporation of America.

Speaking at the Bernard M. Baruch school of business at City College, Mr. Sarnoff said that we are witnessing 'the dawn of a new era, which we call automation' and he outlined the possibilities of automatic factories and offices.

He predicted, in addition to widespread automation, tubeless television, great advances against disease through the use of electron and television microscopes, home-size atomic electrical generators, and many other devices.

—New York Herald-Tribune

★ SASKATOON.—The Canadian power industry will install within the next 10 years as much power-producing equipment as it has installed in its entire history, according to A. W. Howard of Calgary, president of the Canadian Electrical Association.

Addressing the convention of the organization's western division here, Mr. Howard said that approximately 18,000,000 horsepower now was bringing electrical service to more than 4,000,000 Canadian consumers. This rate was exceeded only by Norway. *—Canadian Press*

★ TORONTO.—A new industrial revolution based on nuclear power has just begun, Robert S. Palmer of Denver, executive vice-president of the Colorado Mining Association, said in an address to the Prospectors and Developers Association.

Uranium, Palmer told the prospector delegates, could by providing the raw material for the enlarged power age, open up a new era for mankind.

—Canadian Press

Through The Technoscope...

Technocracy examines the various social and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

Science and Technology

AUTOMATIC SORTING TECHniques have been highly developed in many areas of measurement—size, weight, quantity, shape and color. Photoelectric sorting machines developed by the Electric Sorting Machine Co. have been adapted to food processing; to inspection of plating on small parts, textile clippings and anodized aluminum rivets; to scanning of free-flowing substances; and to separation of different colored sprues and runners remaining from molded plastic products.

AN AUTOMATIC CONTROL SYSTEM has beeen developed by the Industrial Controls Corp. of Chattannoga, Tenn., to provide automatic tape operation of milling machines, lathes, grinders, drills and other machine tools. Tape is the control medium but other recording means, such as punched cards, may be designed into the system if desirable.

A HORIZONTAL DRILLING MAchine manufactured by Zagar Tool Inc., Cleveland, drills and countersinks 100 holes per hour in a rectangular rod. The machine is interlocked electrically for automatic operation, and has two hydraulic feed units and two gearless drill heads.

REDUCTION IN MANUAL HANDLing, high labor turnover and product damage can be realized by automatic pallet loading and unloading. Materials handling engineers and Chemical Corp. and the Coca-Cola Co. have found this to be true in a San Bernardino bottling plant with a hydraulic machine which palletizes or depalletizes up to 1000 cases per hour.

AN ELECTRONIC EYE COUNTS germs or dust particles in the air at the rate of 100 per second. The areosoloscope, developed by N. E. Alexander, U.S. Army Chemical Corps engineer, can also measure particles as small as 40-millionths of an inch long. The method is said to be 1000 times faster than the usual microscopic examination, and may prove useful in air pollution studies and in industry.

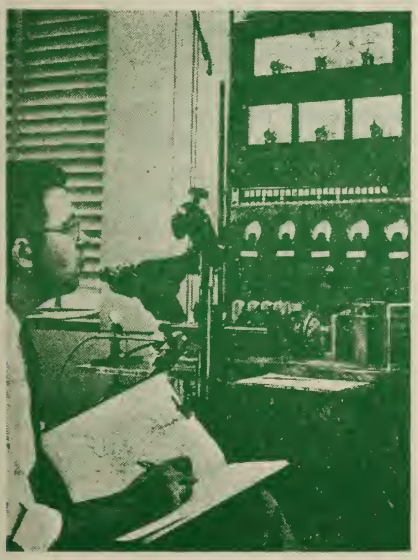
A TELEPHONE THAT ALMOST hangs itself up has been announced by the Automatic Electric Co., 1033 West Van Buren Street, Chicago. The firm claims that no matter how carelessly it is hung up, the handset automatically slides back into its cradle.

This, says Automatic Electric, could save a telephone company of 80,000 telephones up to $345 a month by eliminating off-hook difficulties.

RESEARCH SCIENTISTS OF SOcony-Vacuum Oil Co. Inc. are putting a high-speed electronic computer to work figuring out how to set the valves and fire the stills in an oil refinery to achieve peak efficiency.

Manufactured by ElectroData Corp., the unit was installed at Socony's research and development laboratories at Paulsboro, N.J.

WITHIN A MINUTE, THIS MAchine, still under development at Bell Labs, goes through 15 intricate steps in making experimental transistors. It takes a hair-thin bar of germanium or silicon, checks it for electrical characteristics. If the bar is O.K., the machine attaches wires, connects up others. Out comes a completed transistor. Finally, the machine runs it through a series of electric tests.



ORIGINALLY DESIGNED FOR MILItary use, an automatic bearing-temperature monitoring system is now available for industrial use from Bogue Electric Manufacturing Co., Paterson, N.J. The system continuously monitors bearing temperatures and actuates alarms when bearing temperatures rise above safe limits.

AN AUTOMATIC BOILER CAPABLE of producing 125 hp. maximum rating is being produced by Eclipse Fuel Engineering Co., Rockford, Ill. It is designed for commercial and industrial heating and processing applications and is available with automatic controls for operating requirements.

AN ICE WARNING CONTROL DEsigned to sense jet engine icing and automatically control it has been developed by Cook Electric Co., Chicago. The electrically powered system can be modified to serve as a static velocity detector to safeguard radar antennae or any sensitive outdoor installation from ice formation.

IBM'S NEW CARDATYPE ACcounting machine needs just one operator to handle a master electric typewriter, three 'slave' typewriters, an electronic punchcard reader, a computer, and a machine that makes punch cards or tapes.

GENERAL ELECTRIC CO. WILL DEsign and make the new automatic traffic control system for Chicago. The first units are expected to be in operation in about six months.

ONLY MANUAL OPERATION IN AN automatic grinder manufactured by Besly-Welles Corp., Beloit, Wisconsin, which turns out 1200 to 1400 oil pump eccentric rings per hour, is the loading and emptying of hoppers. Rings are hopper fed into a continuously rotating feed wheel which carries them between two abrasive wheels.

A radially mounted arm releases a limit switch and breaks an electrical circuit to the fixture drive motor should a part fail to enter the feed wheel properly, thus ensuring proper loading. The grinder adapts to small parts such as magnets, snap rings, bearing races, chain saw parts, ceramic washers and insulators.

GENERAL ELECTRIC CO. IS SETting up an atomic power products division that will market atomic power equipment for commercial use. It will design, manufacture and sell various types of low-power reactors and related equipment.

A BROOM THAT USES ELECTROstatic action to attract dirt and dust has been put out by Damar Products, Inc., 75 Damar Building, Newark, N.J. The dust clings to the broom, doesn't rise and settle on furniture.

AN ELECTRIC CHAINSAW THAT weighs just 7½ pounds but can cut down a 14-inch-diameter tree, has been announced by Porter-Cable Machine Co., Syracuse, N.Y. The firm says it costs one-third as much as comparable gas-driven saws.

THE U.S. ARMY SIGNALS CORPS says that new transistors, developed by Transistor Products Inc., show promise of being able to handle enough power to replace higher-power vacuum tubes. Under test, the transistors were found to be able to substitute for the dynamotors and power converters that the Army uses now.

A QUIET TRANSISTOR, SAID TO make less electronic noise than any vacuum-tube amplifier, has been developed by the Millivan Instrument Corp., Schenectady. A noise level of three microvolts is considered good for a vacuum tube; the new transistor's noise level is said to be one-third of a microvolt or less.

FULLY-AUTOMATIC ELEVATORS that require neither operator nor dispatcher and even 'think' when to close the door will be installed in the General Telephone Company of California office building now under construction in Santa Monica. It will be Southern California's first installation of the new 'traffic sentinel' which automatically adjusts door-closing time to traffic flow, according to Herbert C. Galitz, Los Angeles manager of the Westinghouse elevator division.

AN ELECTRIC THERMOMETER that gives instant temperature readings at the push of a button has been introduced by the Victory Engineering Corp., Union, N.J. It was developed for operations where frequent checks must be made: refrigerator, hot houses, freight cars.

TO SAVE TIME AND TRIM COSTS in electronic manufacturing, Radio Corp. of America is set to turn out a new line of automated production equipment. The punching machine shown here is the forerunner. It is instructed by a glass-based cloth tape, which can make it punch almost any pattern of holes for components in electronic printed-circuit panels.

MONSANTO CHEMICAL CO. SAID recently that it had developed a 1½-inch-long unit that uses energy from the radio-active element, polonium. It can produce as much power as an ordinary dry cell, but its cost is still too high for large-scale manufacture.

A NEW SINGLE-STATION SHELL molding machine that is completely automatic and can turn out 40 shell molds per hour has been announced by Mechanical Handling Systems, Inc., Detroit.

IBM IS EXPERIMENTING WITH an all-transistor calculating machine. It is a step toward eliminating vacuum tubes in many types of electronic equipment. Chief advantages: The transistor-calculator needs about one-twentieth the power, takes half the space of previous electronic models. IBM says it is almost ready to start commercial production.

INTEGRATION OF WORKPIECE loading arbors and special tooling on the front and rear slides of an automatic lathe cuts nearly 20% from the original guaranteed time per part—a bonus of eight parts per hour—in the machining of diesel engine cylinder heads.

Manufactured by Gisholt Machine Co., loading operations on the hydraulic automatic lathe feature addition of a two-station loading device.

A NEW AUTOMATED GEAR SPEEDER inspection unit loads, speeds spur and helical gears for sound test, and unloads them onto a conveyor line. All manual loading, unloading and control functions are eliminated by the unit which is manufactured by National Broach & Machine Co., Detroit, Mich.

A SELF-WINDING WATCH THAT corrects its own errors will be shown in the U.S. by Watchmakers of Switzerland, 247 Park Avenue, New York. When setting the watch, you push one button on the watch's rim. In exactly 24 hours —checked by radio or telephone time signal—you push a second button. The watch figures out whether it is fast or slow, adjusts itself to compensate for the error.

A DEVICE THAT PUMPS LIQUID metals has been announced by Callery Chemical Co., Callery, Pa. It has no moving parts, uses an electric current to do the pumping. Current moving through the metal—in a direction perpendicular to a magnetic field that surrounds it—pushes the metal forward.

THREE MILITARY AIRPORTS WILL use Volscan, the electronic air-traffic control system that can land a plane every 30 seconds. The Crosley Division of AVCO Manufacturing Co., Cincinnati, will build the units.

DESIGNED FOR AUTOMATIC SORTing of seed peas and beans, new portable electric color sorting system consists of 12 photoelectric sorting machines mounted in a 35-foot trailer. The unit, which has its own power supplies and other auxiliary equipment, is a product of Electric Sorting Machine Co.

Mobile unit permits photoelectric sorting of seeds and has been developed in response to the demand for mobile equipment which, by following harvesting operations wherever they occur, can apply photoelectric sorting procedures to seed products directly 'in the field.' The trailer, in which sorting machines are housed, is manufactured by Trailmobile Co.

ATOMIC REACTORS FOR TWO NEW submarines will be designed for the U.S. Navy by Westinghouse Electric Corp. Contracts for planning the reactors and control equipment amount to nearly $12,500,000.

INSTALLATION OF AN AUTOMATIC overhead sand handling system for its bronze foundry has just been completed by Superior Brass Works Inc., mechanized producer of bronze castings for industrial and automotive bushings.

One feature of installation is that the mechanized facilities are for only six molders. Rule of thumb, used by old-time foundrymen in the past, held that no foundry could have overhead mechanization for less than ten molders, and then only at a prohibitive cost. The company claims that lower direct and indirect labor costs, less machining stock required on castings, and greater productive capacity have already resulted.

A METHOD TO PREDICT THE RELiability of electronic equipment before it is built is being developed by Vitro Corporation of America. Vitro engineers are using Navy records to study the connection between rates of failure and types of design.

SHAVING GEARS, WHICH HELP INsure quiet, smooth operation in automatic transmissions, is done quickly and automatically at Ford Motor Co.'s Automatic Transmission Divison in Cincinnati. The operator simply fills automatic loaders and takes away finished gears.

One man easily keeps three underpass gear finishers, made by Michigan Tool Co., turning out 600 planet gears per hour. Gears to be shaved are checked automatically for size by a fixture at the entry end of the loader and then move down a gravity chute for the shaving operation, dropping onto a conveyor when finished.

North Americans Are Trained

Because of their natural comprehension of things scientific, North Americans above all others in the world are capable of understanding and adopting a method of operation in accord with a technical type of civilization. That is why Technocracy will come first here.

MOST people in this country understand things that are mechanical. Almost everyone can operate an automobile, a radio, a television set, electrical gadgets, power mowers, washing machines, automatic equipment of many kinds and a multitude of other mechanical equipment. Many people understand the general operation of most of our technological equipment. They can discuss it intelligently and are capable of making minor repairs themselves on the equipment they use.

This native ability is endemic to the people living in North America and is peculiar to this Continent. Every youngster is surrounded from birth by a mechanical and scientific environment in which he takes part every day of his life; in his literature, his comic books, his toys, his schooling, his recreation. Every moment of his consciousness is spent in contact with it. It is part of his life, his breathing, his eating, his health, his play, his education.

Technical training in the more specialized fields of constructing, designing and repairing, generally, comes easily to most of our people. It almost appears as though they were born into these technical fields and that is literally just what happens.

Because of this natural comprehension of things scientific, North Americans above all others in the world are capable of understanding and adopting a method of operation in accord with this type of civilization. That is why Technocracy is something that can be understood by the people of North America and by no other peoples in the world as a whole. That is one reason it will come first in North America. Technocracy is a natural evolution in this kind of civilization.

We trust our scientists and engineers, our technical and mechanical experts with a faith veri-

fied by long experience. We give our very lives into their hands without a moment's hesitation. This includes even those who would delude us into suspecting all scientists and technical people of bizarre activities not quite in accord with certain superstitions and philosophies of the past.

When scientists and engineers tell us what a piece of equipment of any kind will do, we do not question them for long, but watch the testing with the secure knowledge that it will most probably do just what they say it will. We are more than anxious to try it personally even though its failure may mean our life. In the vast and overwhelming majority of cases, our trust is justified. The Scientific Method, the Scientist and the Engineer are already ineluctably established as an operating part of our environment and a partner of our existence. We cannot get along without them.

Technocracy is nothing more than a method for co-ordinating all our equipment as one operating unit for maximum efficiency in producing and transporting goods and services and delivering them to individuals. It is the Scientists' answer to the growing confusion of technological unemployment, automation and too many products which can't be sold. It is the way in which production will be fully consumed without first having to resort to the fallaciousness of monetary wealth. It is not economics, but rather engineering.

For example, let us suppose this planet were suddenly just created. First, North America is made and equipped with all the facilities it now has. Then, people with present education standards are put in to occupy North America. Those with the technical training who know how to operate the equipment are told to operate the entire mechanism so that everything people need or use is transported and delivered to them. Just produce and distribute to every citizen. That's all. No further complications, except to record the process. In exchange for getting all they need, each citizen is willing to perform his share of whatever human beings have to do to make the whole thing operate. This would only be for a few hours per day and a few years of his or her life. If people didn't do their share, they would be ostracized by their

friends and relatives, by Society, just as anyone would be ostracized today in any group if they didn't do their share.

If we could start like that there would be nothing to it. However, to change from the money-grubbing Price System society we still have today, to one of such simple operation, the problems appear to be insurmountable. How are you going to make the specially privileged give up what they've got. How are you going to make people do these things? These are the endless questions we are asked. Actually no one has to lose anything but rather will gain instead with such an operation. No person or group, least of all the Technocrats, will force anything, but the circumstances now developing will do the forcing.

Who would give up a good business when he is making money? Who would distribute his wealth to the less fortunate? Correct! No one! Why should he, when it is not necessary. But, on the other hand, who wants to hold onto a business that can't sell its goods? What's the use of having something no one else has if everyone can get it? What's the good of money or wealth if you can't get your purchases home or use them? What's the good of a modern palace if you can't have lights or power, water and food? What's the good of an automobile if you can't get gas?

What circumstances could possibly exist where these things could happen? They could exist quite easily by having too much of everything and too little money to buy.

In 1954, Technologists, Scientists and Engineers installed and operated a new kind of equipment which runs without men. For many years they have been steadily designing and building better and faster machines. These machines steadily displaced men but because our countries were still growing, more machines were needed and therefore more men to operate them. We grew as fast as men were displaced.

Now, however, it looks as though workmen are going to be totally displaced, not reduced in numbers, and we will find that we just can't grow that fast.

According to a recent newspaper dispatch from Washington, 'Factories in the United States during 1954 turned out the same amount of goods as in the previ-

ous year, but they did it with 850,000 fewer workers.'

Thus for the first time the displacement in one year, with automation just beginning, was so rapid that in spite of a good year for business, an abundance of investment funds and credit, expansion was insufficient to absorb this displacement. Indeed we have difficulty selling the products we produce with a single shift, 40-hour week, and in some cases less.

Should the rate of automating continue or increase through 1955 and 1956, the displacement will very seriously affect our purchasing power.

We should also note here that the ability of these automation plants to produce goods is increased since their rate of output is much higher. A slight increase in the time they are operated will produce any increase in goods that is required without a corresponding increase in employees or wages.

It does not take much arithmetic to add up the result of these trends. Rapid displacement with increasing capacity. We simply do not have the markets available to create enough demand for more goods. At the same time we are removing millions from the buyers' ranks, reducing them from full wage earners of $2500.00 or $3500.00 down to unemployment or relief recipients of only a few hundred dollars per year. These people can buy only a reduced amount of the necessities of life, and cannot buy other things even with a substantial price reduction.

With increasing production capacity, a market which is shrinking in excess of direct proportion to the displacement, the headache increases all through the economy. Think of it for a moment. More goods but less buyers. Where can it possibly end? Business must tune itself to the market. If there is not any market, business shuts down.

Eventually an actual situation will exist where the country has a flood of all kinds of goods and all kinds of people who do not consume, because they are no longer required as wage-earners. Business will not continue long to make a profit under such conditions. Not only would they fail to sell enough of their products, but many already sold would have to

be reclaimed for non-payment of installments.

To exaggerate the case for clarity. When a factory automates and produces the same with five people where they formerly needed 5000, the rate of wages paid really doesn't matter.

Reducing the hours to one per day at the same daily rate would not help a bit. Neither would cutting the price. The pet theories of all the ismists of the world would not help a situation like that. They might have some validity where gradual reduction takes place. That is actually what has happened over the past 30 years; the adoption in actual operation of higher wages for fewer hours. When displacement reaches the proportions which automation suddenly brings, there is no time for adjustment even if there was a potential adjustment which would be practical.

It must be obvious that when people don't consume, business doesn't sell and shuts down. Governments don't collect as much and cannot spend enough to do anything but cause more automation for reducing costs further, aggravating the situation. This is the vicious cycle into which we now find ourselves plunging with increasing rapidity. It will become even more obvious shortly.

People insist on living! They cannot live if they cannot consume. A solution must be found and quickly. The best comment offered by the 'top' brains of the century in the non-technical field, the members of the National Planning Association, states unequivocally: 'The economy can prosper only when consumer purchasing power grows in approximate proportion to the ability to produce.' There is no thought given as yet, outside of Technocracy, toward facing the problem where purchasing power is unable to grow but instead declines. Technocrats have been predicting this situation for 35 years. You believe Scientists and Engineers most of the time. You've got to believe them now. The evidence is overwhelming that Technocracy has been correct in telling you what machines would eventually do to our society and the Price System. The time is arriving. You cannot create jobs and at the same time destroy them.

We will soon be unable to operate by the old-fashioned method of paying a wage for time work-

ed. A completely different method of distributing goods must be adopted quickly to prevent complete shutdown and consequent anarchy.

North Americans can understand the technical reasons for this situation. They are quite capable of understanding that where the situation as described above exists, you simply cannot operate any longer under a Price System. They can understand that you must distribute goods somehow to all North Americans or the equipment they know so well will be silent and people will not be noisy for long. They can understand that we must keep operating, by using the goods, transporting them directly to people and account for them scientifically.

They can understand that Engineers and Scientists know how to make equipment which will keep an automatic record of everything distributed or produced all the time. They can understand and visualize with their mechanically trained minds that such a record would balance production with consumption 100% of the time. They can understand that this must be done, and done quickly. Technocracy must be adopted as an emergency measure to preserve our civilization. They can understand that Technocracy is a method, not a group of people. So far it is the only method possible under the circumstances and will be installed only because it is needed, not because we like it. That is incidental.

The Engineers predict it can be done and North Americans believe the Engineers. The method is employed throughout all industry and we know it works. They don't call it a Technocracy, but that is what it is just the same. The politician, the business man, the preacher, and all the rest believe the Scientist because they too live in the same environment. They would like to keep their special privileges, as who wouldn't. but they have to consume too. If no one else consumes because of the Great Silence, neither do they, no matter how much money or prestige they have, no matter what the price is.

Technocracy is designed to synchronize modern production and distribution. That's the way it is. We have no 'attitudes' as an organization. We are not going to install it. All we will ever do is

just tell you and advise as a consultant when needed. Nothing else. We will state the facts as the situtation develops. We are not for or against anything, but we would like to go living too. We are betting on the understanding of the North American, regardless of the position he now holds.

All people object to any change when they are comfortable. When they are not comfortable, they demand change. If they understand what is wrong, they know what they want and what to ask for or demand.

If they do not understand what is wrong, they don't know what to do to correct the wrong, and get hysterical and anarchic in every direction. That would be fatal.

People have opposed Technocracy because they thought it was trying to force a change on them. They have not yet grasped the peculiar character of what Technocracy is. They do not yet understand that Technocracy is a design of operation not a social philosophy. As such it is like a blueprint for a building, a structure that has to be built. It is a plan for operating a Continent's physical equipment, its automation and Abundance. It is something to examine closely so that it can be understood.

With the background North Americans possess, they alone will demand because they understand what is wrong. In Shutdown, no one is any better or worse than his brother. The circumstance will arrive to make us all naked and equal before our various Makers. It is then that we must know what to do. We all die together or we all learn to live together again in Abundance, Security and Peace.

Technocracy stands unique in history, a group of North Americans, pleading to be heard, pleading to be done out of a job. Our job is to inform North Americans so that they will understand what must be done. Nothing else. When the plan is adopted, the job of the Technocrats is finished. They will all take their places in society according to their ability just as our present opponents will do.

Technocrats did not create this situation. They merely recognized it ahead of everyone else, and are willing to interpret it to any North American anytime, any place, anywhere. **—Ron Morgan**

The Future of America

A Technocratic writer looks at the Price System booklet, 'The Future of America,' which is either naive or attempting to sustain the confidence of North Americans in their crumbling society and to augment their apathy toward making any changes in our social order.

ONE of the most pernicious pieces of propaganda, which is being widely advertised, is the booklet, 'The Future of America,' published by the Advertising Council, Inc. The booklet is advertised on the radio and on car cards as follows:

'Great changes are taking place in America—changes that affect your job, your home, your future! Every American should know the facts in this free booklet.

'The better you know America, the better the future looks.'

The booklet itself starts out with these words:

'Look into America's future, and you can see your own.

'Look into America's future, and you can set your hopes high.

'This dynamic country of yours has been in a period of tremendous growth. This has meant more jobs, more money, more security, more homes and more opportunities for everyone.

'As you look into the future, all that can be seen is promise of even greater growth for your country, and for you. This is the big promise, and the arithmetic that proves it is simple, dramatic, and as sure as two and two make four.'

The writers of this propaganda are either extremely naive or are insidiously attempting to sustain, for a while longer, the confidence of our citizens in our crumbling Price System and to augment their apathy toward making any changes in our social order.

True, this country **has been** in a period of tremendous growth and great prosperity; however, the prosperity was not caused by **growth in population.** It was caused basically by war. Technocracy states that under the Price System, in this age of technological production, we cannot have prosperity **and peace.**

During World Wars I and II, and during the Korean War, a large number of our factories

were converted to the production of war supplies and armaments, of which they produced an abundance, with enough additional productive capacity to supply the required amount of civilian goods and services. Now, though we continue to make some materials of war for 'defense,' the volume of civilian goods is so great that we are being swamped with them.

Our Price System, being geared to scarcity, is not set up to distribute an abundance; therefore, in order to produce an artificial scarcity, the government resorts to curtailment of production, to shipping so-called surpluses abroad, to storing goods to 'support the price,' and to the deliberate destruction of some products.

Increase in population today means further increase in the number of unemployed, under the Price System. This statement is 'as sure as two and two make four.'

Facts prove it.

The crude machinery in use prior to the development of the steam engine had a time rate of doing work which was extremely slow in comparison with the high-speed, automatic productive equipment which we have today. There was a great deal of friction in those old machines, they broke down frequently, and sometimes it took a long time to repair them, but by far the greatest factor in their slowness was their dependence upon muscular power, either human or animal, for their motive power, with the exception of windmills and waterwheels, which were also very slow.

For the purpose of pumping water out of the coal mines in England, at one time, as many as 100 horses were used, working on treadmills. The upkeep of the horses was so great that this was not practicable. About this time the steam engine was developed, and the first actual work which it performed was that of pumping the water out of the coal mines.

The steam engine brought about a revolutionary change in methods of producing salable goods. From the time of its development until the present, more and more extraneous energy (energy other than that from the conversion of food into energy) has been used for more and more purposes.

Fewer and fewer men are required to operate the new machines and equipment. This trend has accelerated tremendously.

For instance, from 1919 to 1943, the production per man-hour increased 100 per cent!

In 1940, in the Hell Gate Station, New York City, there were five steam turbines, each having a power of 160,000 kw. When these five engines were running at full capacity, the work performed was equal to that of 32,000,000 men working at hard labor eight hours a day each.

Since the end of World War I we have increased production by **decreasing** man power and using technology instead, which is much faster and cheaper and more accurate than human workers. Human beings have become obsolete for the performance of routine work for they are unable to keep up with the increased speed of production.

The increase in technological production far exceeds the increase in population. For instance, it has been estimated that during 1953 Canada's gross national production reached a record height of $244,300,000,000. James Stewart, president of the Canadian Bank of Commerce, made the following statement: 'In constant dollars, the increase in productive capacity as reflected in gross national productive figures shows an increase of more than 100 per cent, as contrasted with the 30 per cent increase in population.'

Here on the Continent of North America, technology has made it possible to produce such an abundance of goods and services that the Price System has become a bottleneck to distribution. The larger part of our purchasing power comes from wages, and as wages diminish through technological displacement, purchasing power diminishes, and less goods and services are distributed. This trend accelerates as the various business enterprises compete with one another in a mad rush to install more labor-saving machinery than their competitors have.

The foregoing are the facts that prove that, as stated previously, further growth in population means further growth **in the number of unemployed.**

The booklet continues as follows:

'Since you opened this booklet, a baby has been born. By this time tomorrow, your country will have 11,000 new Americans. By next month, a city the size of Syracuse will have been added to the strength of your nation.

'This is the secret! The almost unbelievable g r o w t h that can strengthen everybody's job, brighten everybody's opportunity, and assure everybody's f u t u r e . . . 11,000 crying n e e d s a day . . . t h a t ought to make everybody happy . . . All these babies need food and how! A job first for the farmer, perhaps. And to meet it efficiently, farmers must buy machines, and that can help create new jobs all over America. Just to keep pace with recent population growth, f a r m e r s have increased output per man-hour 52% through mechanization a n d improved farm methods.'

Up pops the old fallacy that machines make jobs! This was true before we reached the time when we could produce more by decreasing man power. Today machines make jobs scarce, because machines displace human workers at an accelerating rate, and even the production of machines is done more and more automatically.

What becomes of the men who are no longer needed in production? The majority of them cannot find employment in other industries, because other industries are b e c o m i n g automatic, too. What becomes of the babies in the families of these men? If the parents cannot earn wages, they cannot buy the things their babies need. Unemployment compensation lasts only a short time, and it has been estimated that the savings of the majority of workers with families would not provide the necessities of life for more than about ten days.

'Farmers have increased output per man-hour 52% through mechanization and improved farm methods,' the booklet states. But do we have as many farmers as we had 30 or 40 years ago? Decidedly, NO. Farms have increased in size as well as in capacity to produce, but the number of men required on each farm is decidedly smaller now than it was 30 years ago. With the currently lower prices for farm produce and with governmental curtailment of acreage, the farmer's i n c o m e is due to shrink faster and faster. As this occurs, prices will drop in other commodities, and business w i l l sink deeper into the current depression.

On the one hand, we have 11,000 new babies a day in the United States, all needing food, and on the other hand, we have farm sur-

pluses at the record high of nearly $7 billions. Though the so-called surplus food is needed in the United States, it is kept off the market under price-support programs.

We are facing the inability of the Price System to distribute what has been produced. Our obsolete method of distribution is jammed up by the abundance of goods and services which are produced by our modern industrial equipment.

'In America today, there are almost 70% more children under 5 years of age than we had in 1940.

'This creates a tremendous need to build new schools. Billions of dollars worth of new schools are needed—because we must nearly **double** the existing system.

'It is estimated that we should spend some 40 billion dollars for schools and hospitals alone. And right away!'

Money for schools and government hospitals must come from taxes. How can the government levy enough taxes to raise this $40 billion, and at the same time create enough debt to save business? Workers are already heavily burdened with taxes. In December, 1954, General Electric published the following:

'Putting the tax burden on a daily work basis for the first time, the Tax Foundation . . . has discovered that it takes a $4,500-a-year man 2 hours and 35 minutes of his eight-hour work day to earn enough to pay for taxes. The taxes included are both direct and indirect, not forgetting the taxes hidden in the cost of many things we buy . . .

'If you wonder where the recent Federal tax reductions fit into the picture, here is the answer: last year this man worked 2 hours and 40 minutes to pay for his taxes. On that basis we might guess that he saves about two minutes of the time spent working for taxes whenever the government knocks a billion off its tax take.'

As the number of workers decreases, the taxes per individual will be higher, for those who are technologically displaced will become unable to pay their taxes; moreover, the latter will most likely be placed on a subsistence allowance derived from additional taxes.

The booklet continues:

'Literally everything must grow faster and faster to keep up with

the fantastic snowballing population growth ahead.

'Business today faces an outlay of hundreds of billions of dollars just to modernize plants and replace worn out or outmoded machines.'

Construction companies benefit while the new plants are going up, although these companies, too, are finding many ways to eliminate workmen. Plants are being **modernized,** which means that they are being so constructed that they will be able to produce more with fewer men than formerly.

Another trend which leads to more unemployment is that of mergers. Big businesses are swallowing up little businesses. In one of Sylvia Porter's newspaper articles was the following statement:

'The greatest wave of corporate mergers in 30 years is now surging over our land . . . Hardly a day passes without news or rumors of new corporate mergers.'

Further on in the booklet we find this statement:

'The long range trend in employment is **up.**'

How can they say that? The trend of technological displacement of employees is unidirectional, as has been shown.

This 'enlightening' booklet continues:

'Even though employment in some areas has fallen off, we still have twenty million more jobs than we had in 1939.'

In 1939 we were still in the depths of the worst depression we have ever had. The stock market crash of 1929 resulted in an unemployment figure of 15 to 17 million. We re-employed this number of workers and a few million more when production was stimulated by World War II and the Korean War. The manufacture of war material still goes on, though not in such volume as in wartime.

It is possible that in the near future the nations of the world (**all** the nations of the world—not merely the nations of the 'free' world) will come to their senses and realize that modern warfare does not settle arguments and that those on both sides of the conflict risk mass annihilation of their populations. The result should be a world-wide agreement to abandon war for all time. If, or when, this happens, the number of unemployed will sky-rocket, under

the Price System, especially here on the Continent of North America, where technology has advanced further than on any other continent.

Quoting a few more lines from the booklet:

'American science continues to give us miraculous developments in electronics, jets, rockets, chemistry, which are opening broad new fields of opportunity. **We stand at the very beginning of the new atomic world.** And this alone may be the most tremendous personal and industrial opportunity of all time. Millions of today's youngsters can prosper in jobs, that parents have never even heard of right now.'

This brings up the argument that entirely new industries increase employment. New industries will certainly not revert to hand-tool methods of production, for we now have technological devices which can 'see' better than human eyes (some of them even having X-ray eyes); can 'think' faster than human brains; can move faster than human muscles; can lift much more weight than human backs; and can handle delicate materials as carefully as human hands. In short, they can do everything in the line of routine factory work and do it with miraculous efficiency and do it at an extremely low cost per unit. The office as well as the factory is being invaded by technological displacement.

On the last page of the booklet is the following summary:

'It all adds up to a $500,000,000,000 opportunity right now . . . because this staggering sum should be spent immediately **just to meet current actual needs.**'

This money **should be** spent. People **do need** this amount of goods and services. But where, under the Price System, is this amount of money going to come from?

America is being grossly mismanaged under the Price System. 'Great changes are taking place in America — changes that affect your job, your home, your future.' Changes that will jeopardize your job, make it impossible for you to finance your home, ruin your future — unless we citizens of North America wake up and demand that governance by politics be abandoned and that Technocracy (governance by science and skill) be established throughout North America. Technocracy is 'a

form of social control in which the physical factors, not human opinions or traditions, determine **what** shall be done in the way of social operations, as well as **how** it shall be done.' There is no scarcity of natural resources, nor of automatic machinery, nor of trained personnel. America has the greatest industrial capacity in the world. Scientific measurements indicate that it is possible today for every citizen of North America to have an abundance of goods and services. Technocracy is pointing out the way to make the change — the way to adapt our social order to a condition of abundance, and the way to distribute that abundance to every citizen on this Continent.

The booklet affirms: 'The better you know America . . . the better the future looks.' The better you know America, the **worse** the future looks, under the Price System. Technological displacement is reducing mass purchasing power at an accelerating rate. Unless we abandon the Price System and demand that Technocracy be established, before it is too late, the Price System will arrive at a point where it will become completely unable to function. All distribution of the necessities of life would stop — a chaotic situation too horrible to think of.

The last paragraph in the booklet ends with this sentence:

'No matter who you are — no matter how you make a living— you, as an American, can **set your hopes high.'**

You can set your hopes high that Technocracy will be accepted by the people en masse in time to save us all from chaos; but you must have more than hopes— you, in co-operation with other wide-awake citizens of North America, must **do something about it.** You must promulgate Technocracy in every way possible. You must do your utmost to make people aware of the disastrous situation America faces and the 'crying need' for Technocracy.

Then you will have reason to hope that there will be a **New** America, in which there will be no poverty, but a **great abundance** of goods and services for every citizen of this Continent! On **this** basis you can 'set your hopes high'! **—Edith V. Chamberlain**

Japan Faces a Crisis

WASHINGTON—Attempts by the United States to hold down Japanese trade with the Communists run up against this disagreeable situation:

Japan must have more trade to avoid a deep depression. The country's ailing economy may be shored up by heavy American subsidies, but these outlays will not provide a long-range solution.

That is the estimate of some state department experts here as Harold E. Stassen reports on his three-week tour of seven Asian nations.

Stassen, U.S. foreign operations administrator, warned the Japanese just before returning home that the risks of Japanese-Chinese trade were great. During the same week, Japanese Premier Ichiro Hatoyama conferred with an unofficial Communist contact man about increasing trade with Peiping.

The nub of Japan's problem, in the opinion of students of the problem here, is that the country's population (more than 90,000,000) is spurting, with some 450,000 added to the working force each year.

This is more mouths than Japan can feed and more labor than Japan can absorb; it's cheap labor, but inefficient. A U.S. miner, for instance, digs about 18 times as much coal as a Japanese miner. Coal, once imported from Manchuria, now must be imported from the U.S.

The situation in food supplies is similar. It is more expensive to grow rice in Japan with cheap labor than in the U.S. with modern methods. About one-third of the islands' food supply must be imported.

To pay for these imports, Japan must export. Stassen is reported to have told the Japanese to concentrate on trade with Southwest Asia. Unfortunately, the purchasing power of these potential customers tumbled with the fall in raw material prices after the Korean war.

The Japanese are also running into the politically protected competition of British, and to some extent American industry as well

as technological superiority of the fast-expanding German trade.

American thinking on what can be done to help the situation centres on two points: more aid to the area—both to Japan and to her potential customers in Southeast Asia; and tariff concessions.

Both approaches face difficulties on the American home front. President Eisenhower is expected to send his recommendations on foreign aid for fiscal 1956 to Congress shortly. Reports of Japanese flirting with the Reds are not likely to help the aid program through Congress.

Direct trade negotiations between Japan and the U.S. will open soon, and American business is prepared to fight strenuously against any increase in Japanese imports. **—NANA**

★ CLEVELAND.—Walter P. Reuther, president of the CIO United Automobile Workers of America, said in his keynote address at the UAW's 15th national convention here that a 'more and more' labor policy is necessary because the development of automatically controlled machinery, if properly nurtured, now insures an 'economy of abundance.'

He said that failure would find that the fast improving automatic machinery, instead of creating economic abundance, 'can dig our economic graves.'

—Associated Press

★ TORONTO.—A United Church of Canada minister says the Roman Catholic Church is in grave danger of making itself an 'international nuisance' because of its stand on birth control.

Dr. Claris Silcox, Canadian representative of the world alliance for international friendship through religion, said that science is wrestling with the problem of overpopulation 'but as fast as scientists solve some aspects of it, the celibate theologians and metaphysicians, in their contemplative raptures, interfere.' *—Canadian Press*

★ OTTAWA.—A top Canadian scientist has forecast that atomic power plants will be producing electricity economically in Canada between 1960 and 1965.

Dr. W. B. Lewis, vice-president for research and development of Atomic Energy of Canada Ltd., also said that atomic power stations may be called on by that time to turn out 1,000,000 kilowatts to meet Canada's growing appetite for power.

—Canadian Press

★ BOMBAY.—India hopes to be producing 6,000,000 tons of steel a year in 1962. Her present steel output is 1,300,000 tons.

India proposes to achieve this target by increasing the production of the existing three plants and by building three more. *—Reuters*

★ LONDON, Eng.—The Carnegie Trust has granted $4200 to a British electrical engineer who, with a new machine, has broken the 'sound barrier' for persons who are deaf and blind.

Called Arcaid, the machine has an ordinary typewriter keyboard on which the sighted person types out messages which appear on tape in braille that can be read by the hands of the blind and deaf person. *—Reuters*

They Say . . .

Automation Theme

Look for the specter of automation or 'the new technology' to be a frequent attendant at future contract negotiations.

To give this specter a more flesh-and-blood look, CIO held a 'Conference on Automation' in Washington recently. It was important enough to bring Walter Reuther, CIO and auto union president, from Detroit where vital bargaining on the guaranteed annual wage was in progress.

Reuther shared the program with Sen. Joseph C. O'Mahoney (D-Wyo.), Prof. Donald P. Campbell of the Massachusetts Institute of Technology, automation consultant John Diebold, and Prof. Walter S. Buckingham of Georgia Institute of Technology —the invited panelists.

While automation may not be the panacea for all our economic ills, as some claim, it may well become the whipping boy in a good bit of CIO propaganda . . .

—Business Week

Engineers Essential

The engineer's practical applications of science have done much to make our American standard of living the highest the world has ever known.

He has helped promote our national welfare and security and the health, comfort and prosperity of our citizens.

In this technological age the nation's need for his services is constantly expanding.

—President Eisenhower

Want Automation

The American people want automation, because in it they see the evolution of man's age-old desire to eliminate human drudgery.

Automation is here to take up the body breaking, unpleasant and unsafe jobs human labor no longer wants at any price.

—Ralph E. Cross

★ WASHINGTON.—The United States Senate's stock market inquiry brought a warning today of a 'boom to doom' danger.

J. A. Livingston, financial editor of the Philadelphia Bulletin and writer of a syndicated column, saw danger of a 'boom to doom' cycle in a surge of Wall Street optimism not too different, he said, from the one 'which led to the poorhouse in 1929.'

—Associated Press

TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $6.00 which are paid by the membe. to his local Section.

★ Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

★ There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Alaska. Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that become known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director - in - chief, made his first Continental lecture tour which laid the foundations of the present nation - wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing !

WHO ?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

★ Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American — you are welcome in Technocracy.

TECHNOCRACY

Whatever the future of Technocracy, one must fairly say that it is the only program of social and economic reconstruction which is in complete intellectual and technical accord with the age in which we live.

—Encyclopedia Americana